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Total-Dose Radiation Effects Data for Semiconductor Devices 1985 Supplement

Keith E. Martin
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William E. Price

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May 15, 1986



National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

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ABSTRACT

This document provides steady-state, total-dose radiation test data, in graphic format, for use by electronic designers and other personnel using semiconductor devices in a radiation environment. The data were generated by JPL for various NASA space programs. The document is in two volumes: Volume I provides data on diodes, bipolar transistors, field effect transistors, and miscellaneous semiconductor types, and Volume II (Parts A and B) provides data on integrated circuits.

The data are presented in graphic, tabular, and/or narrative format, depending on the complexity of the integrated circuit. Most tests were done using the JPL or Boeing electron accelerator (Dynamitron) which provides a steady-state 2.5-MeV electron beam. However, some radiation exposures were made with a Cobalt-60 gamma ray source, the results of which should be regarded as only an approximate measure of the radiation damage that would be incurred by an equivalent electron dose. All data were generated in support of NASA space programs by the JPL Radiation Effects and Testing Group (514).

PREFACE

Volume II of the Total-Dose Radiation Effects Data for Semiconductor Devices, 1985 Supplement contains new test data generated since the December 1, 1981 release data of the original Volume II, JPL Publication 81-66.

There are two parts to Volume II. Part A contains data for devices starting with the 1802 CMOS Microprocessor and ending with the LM108 OP AMP. Part B contains data for devices starting with the LM111 Voltage Comparator and ending with the SMP-11 Sample and Hold. For ease in referencing, the Index and Appendixes are included in both Parts A and B.

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^aSee Appendix A for Vendor Identification Code List.

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^aSee Appendix A for Vendor Identification Code List.

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^aSee Appendix A for Vendor Identification Code List.

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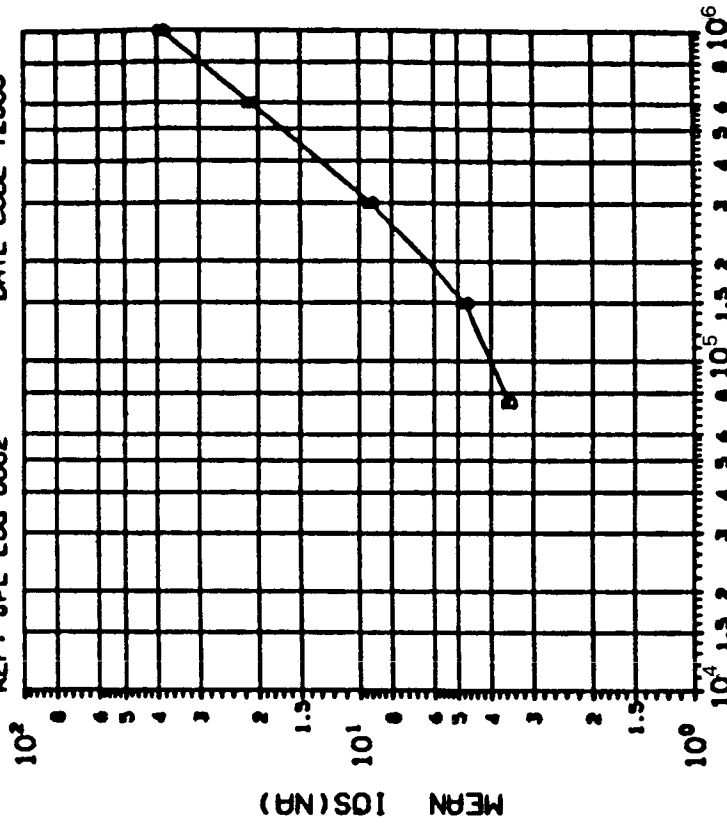
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A. VENDOR IDENTIFICATION CODE LIST	A-1
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*Sections I through IV and Section V, pages 5-1 through 5-498, are located in Volume II, Part A.

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0882 DATE CODE T2668

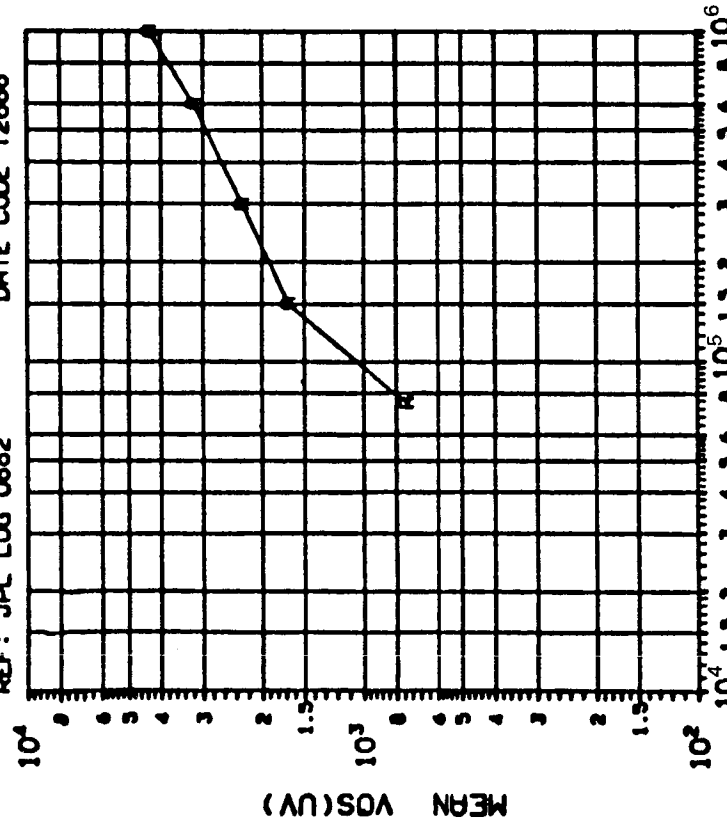


(2) IOS (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	1000
	150	300
	300	600
	600	1000

INITIAL MEAN VALUE IOS(NA) = 4.72x10⁻⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0882 DATE CODE T2668

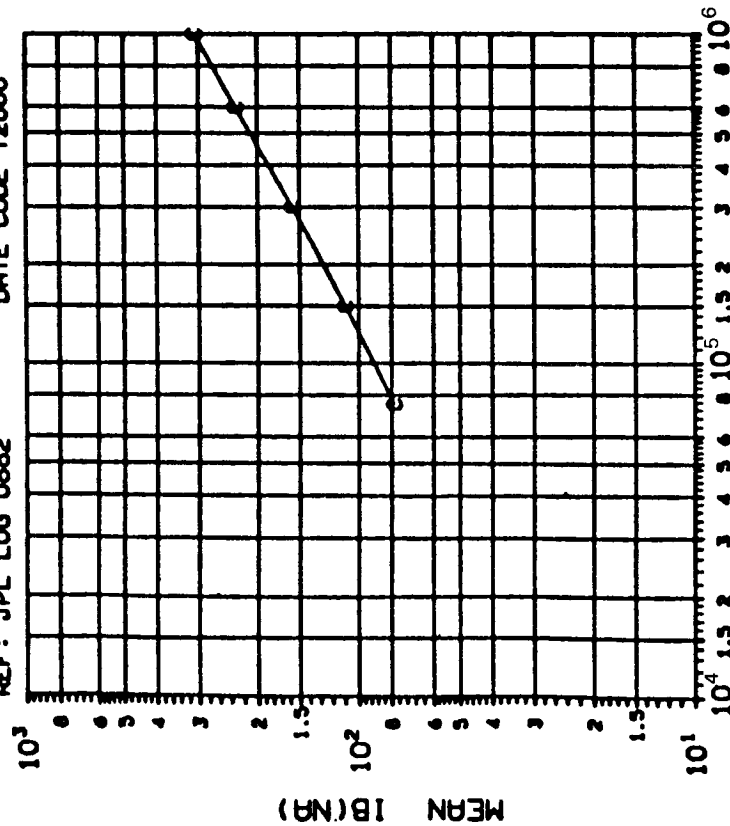


(1) VOS (VO=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	1000
	150	300
	300	600
	600	1000

INITIAL MEAN VALUE VOS(UV) = 4.28x10⁺²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0882 DATE CODE T2668



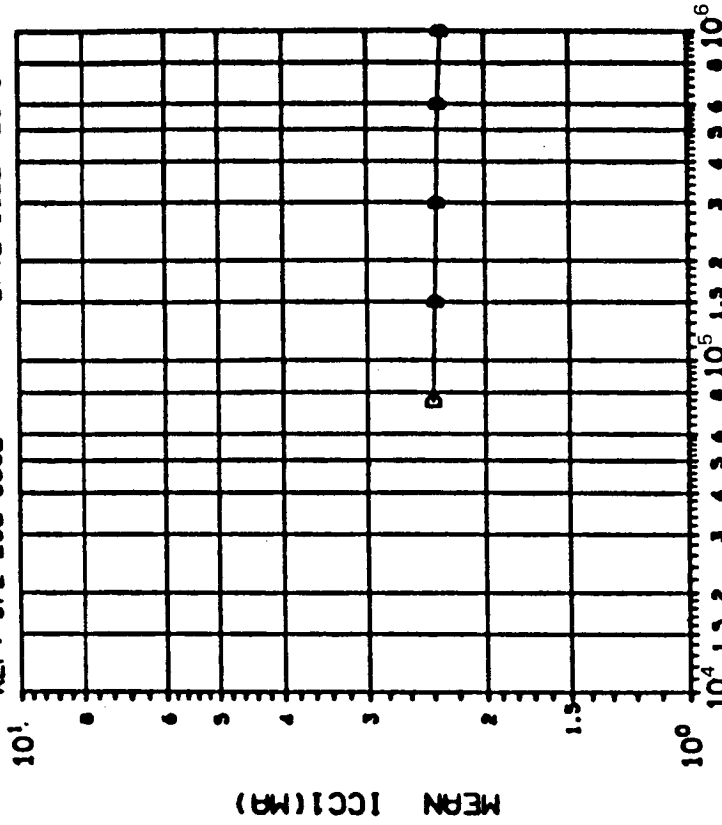
DOSE, rads(Si) 2.5 MeV electrons

(3) IB (V₀=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
	1000
	2.773 2.341 3.674 3.493 4.207

INITIAL MEAN VALUE IB(NA) = 2.97×10^{-1}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0882 DATE CODE T2668



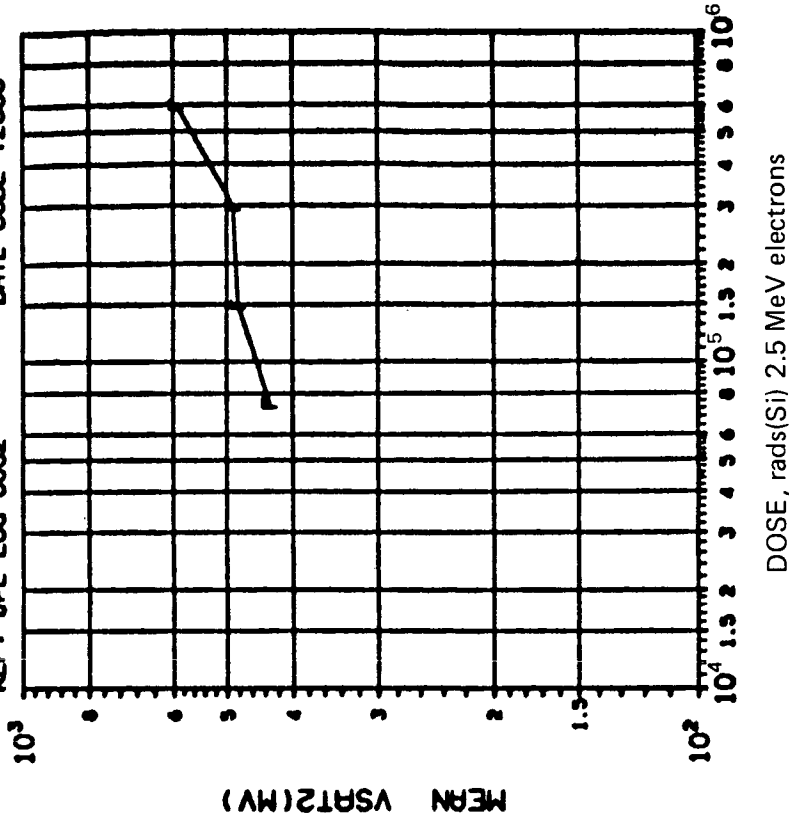
DOSE, rads(Si) 2.5 MeV electrons

(4) ICC1 (NO LOAD): IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
	1000
	.0864 .0879 .0862 .0819 .0866

INITIAL MEAN VALUE ICC1(MA) = 2.44×10^{-4}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0882 DATE CODE T2668

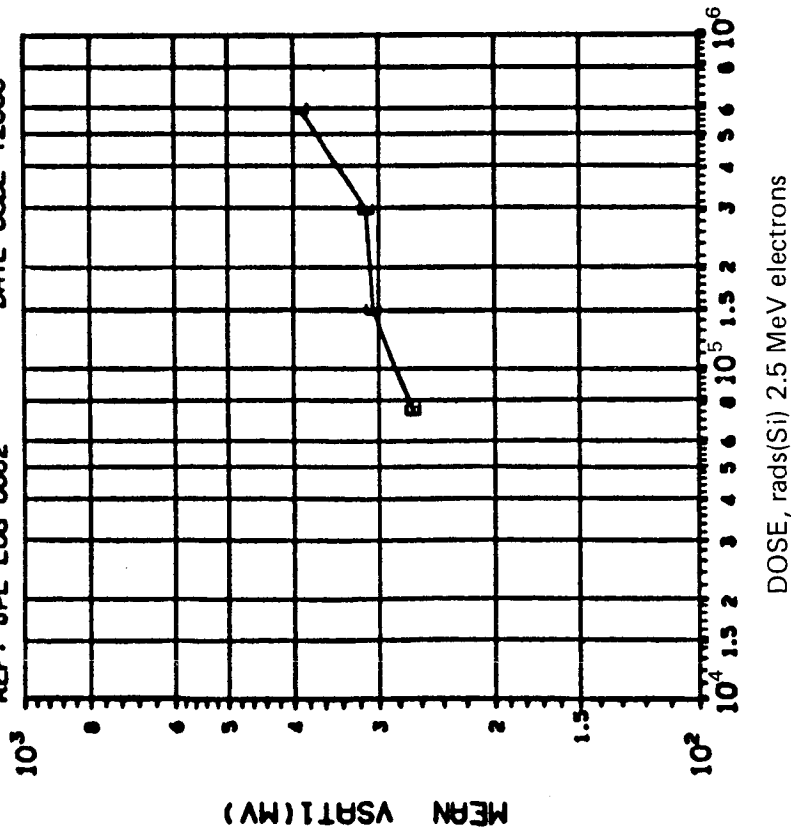


(6)VSAT2 (ISK=14MA) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300 600 1000
F	13.61	19.61	14.70 28.36 ****

INITIAL MEAN VALUE VSAT2(MV) = $4.10 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0882 DATE CODE T2668

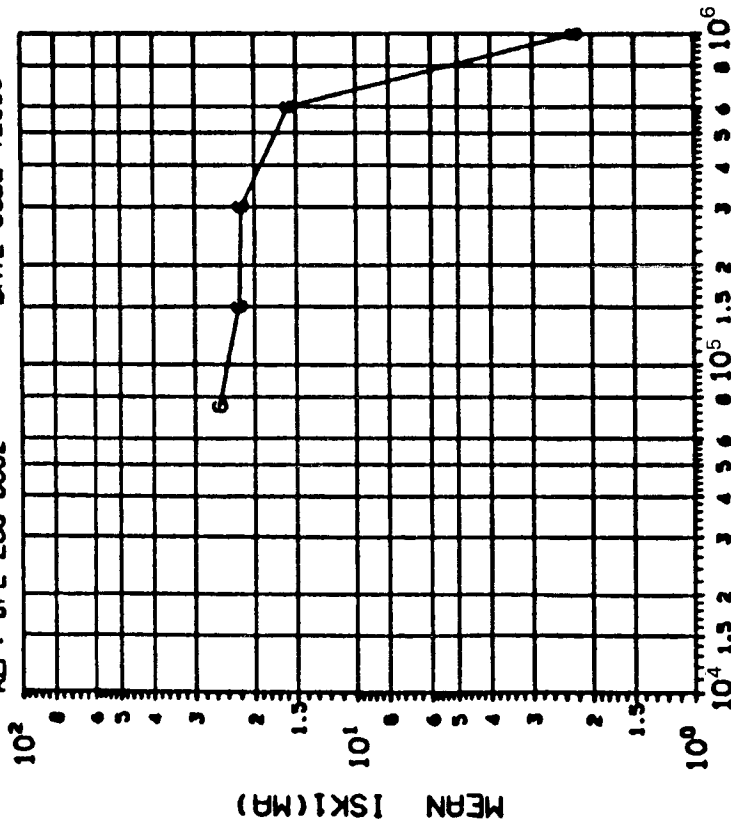


(5)VSAT1 (ISK=5MA) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300 600 1000
E	10.49	14.57	11.45 20.91 ****

INITIAL MEAN VALUE VSAT1(MV) = $2.48 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0882 DATE CODE T2668



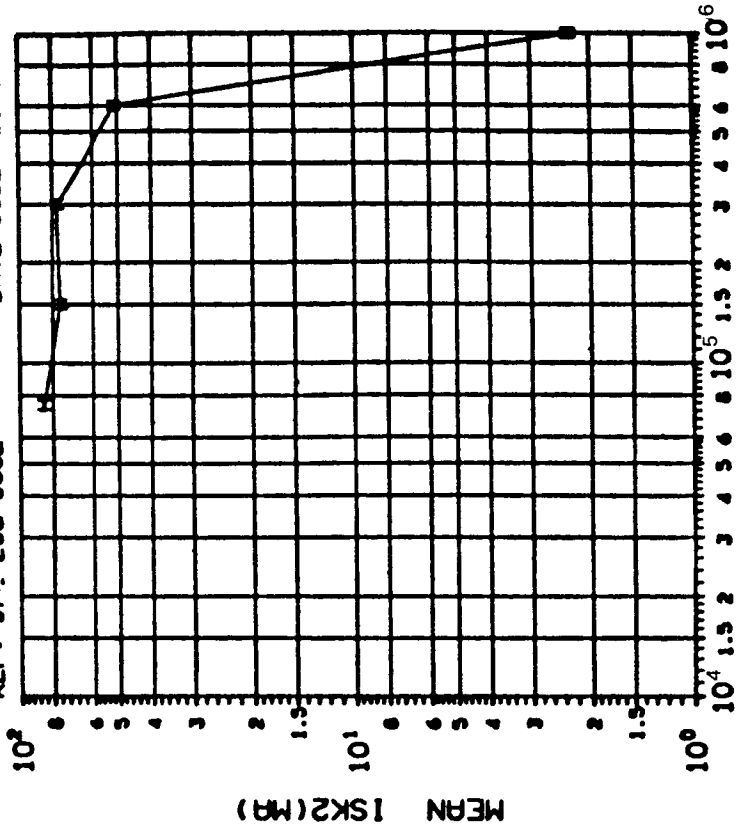
DOSE, rads(Si) 2.5 MeV electrons

(7)ISK1 (V0=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
G	75	150
	300	600
	1000	
	1.180	1.606 1.055 1.456 1.035

INITIAL MEAN VALUE ISK1(MA) = 2.71×10^{-1}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0882 DATE CODE T2668



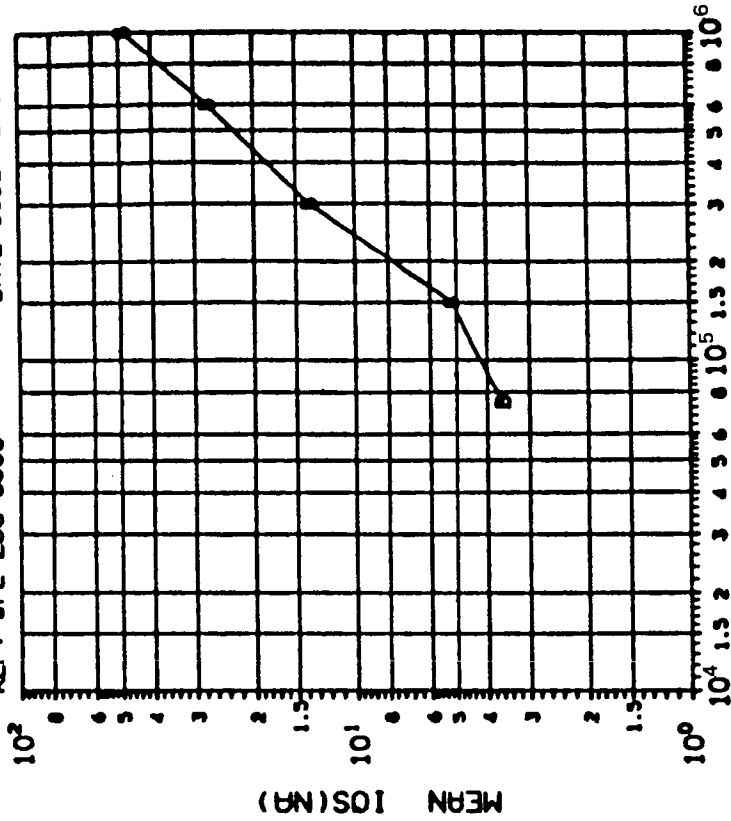
DOSE, rads(Si) 2.5 MeV electrons

(8)ISK2 (V0=1.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
H	75	150
	300	600
	1000	
	1.869	5.596 2.857 14.59 1.092

INITIAL MEAN VALUE ISK2(MA) = 8.64×10^{-1}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0883 DATE CODE T2669

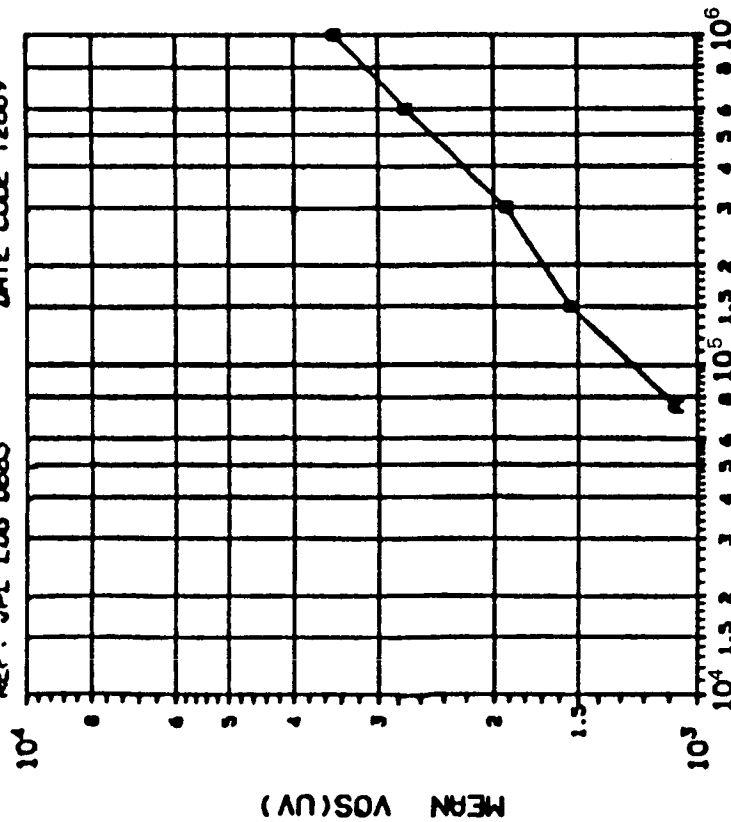


(2) IOS (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
B	2.615	2.593	2.625
	3.411	2.399	

INITIAL MEAN VALUE IOS(NA) = $4.76 \times 10^{+0}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0883 DATE CODE T2669

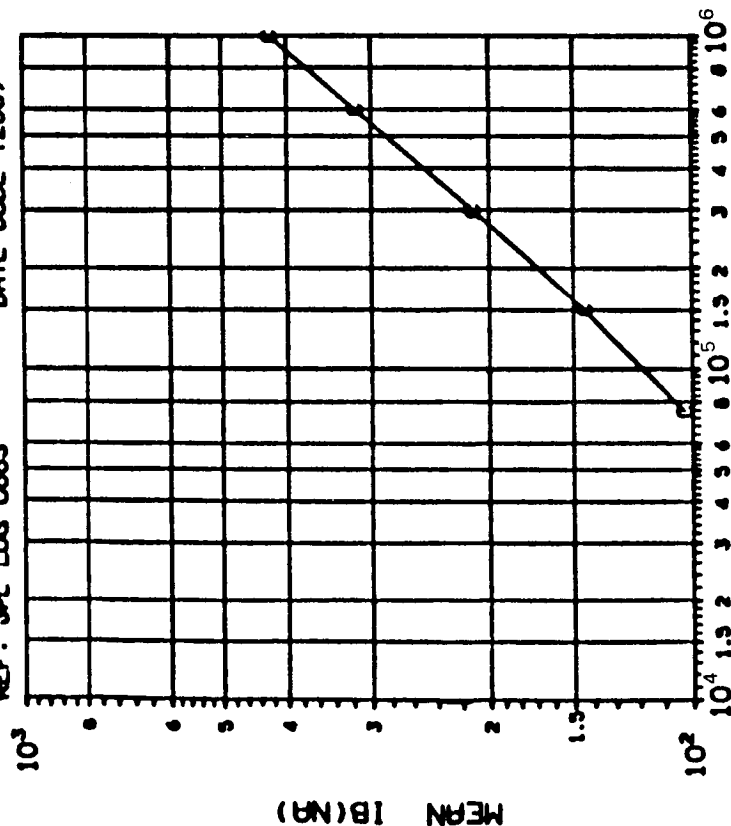


(1) VOS (VO=0.5V) IN VOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
A	624.7	652.6	575.7
	657.9	565.3	

INITIAL MEAN VALUE VOS(UV) = $4.96 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG D883 DATE CODE T2669



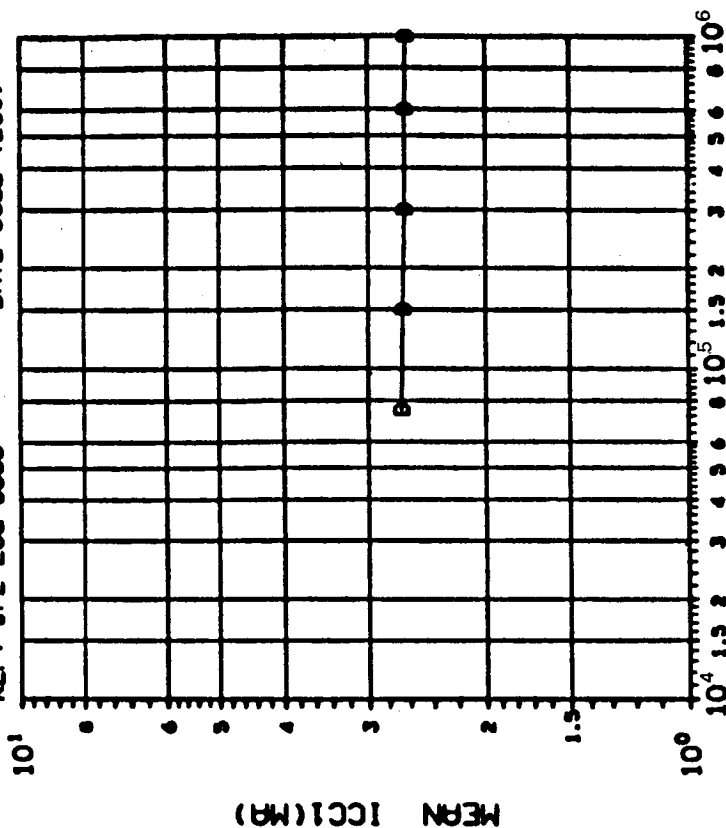
DOSE, rad(Si) 2.5 MeV electrons

(3) IB (V₀=0.5V) IN nA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
C	8.209	11.77	15.08
	24.74	36.92	

INITIAL MEAN VALUE IB(nA) = 3.60x10⁻¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG D883 DATE CODE T2669



DOSE, rad(Si) 2.5 MeV electrons

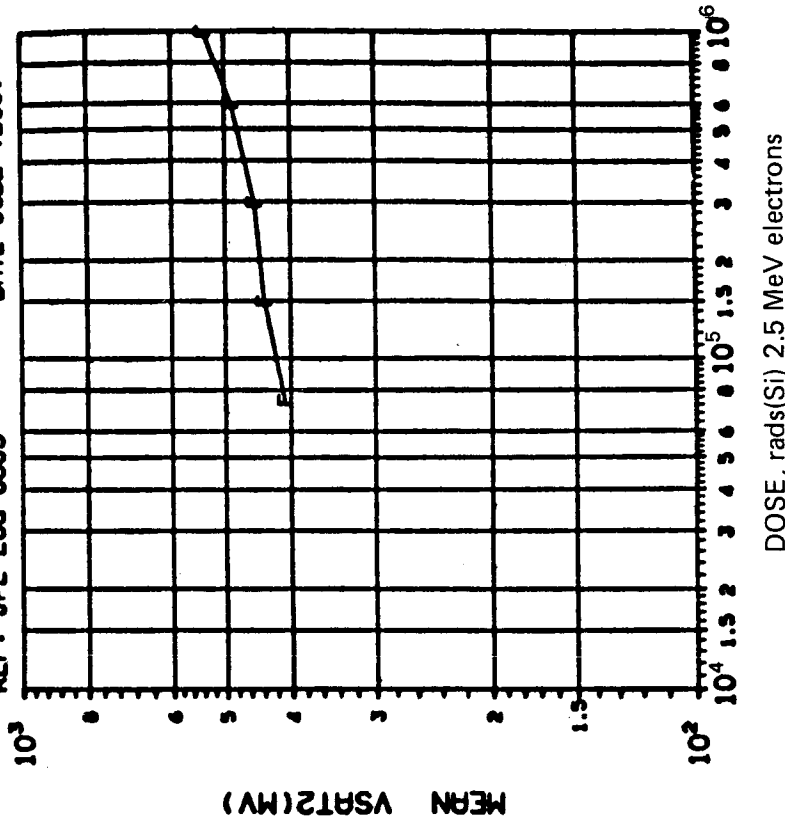
(4) ICC1 (NO LOAD): IN nA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
D	.1152	.1197	.1270
	.1229	.1301	

INITIAL MEAN VALUE ICC1(nA) = 2.73x10⁻⁰

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DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0883 DATE CODE T2669

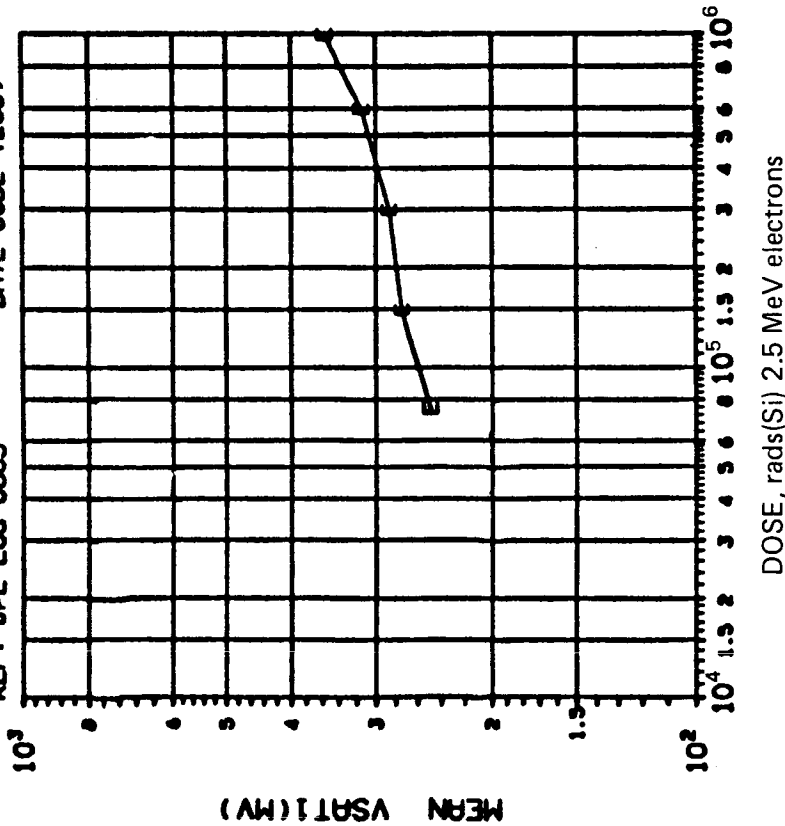


(6)VSAT2 (ISK=14MA) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
F	7.411	9.437	10.35
			600
			1000
			13.26

INITIAL MEAN VALUE VSAT2(MV) = $3.69 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0883 DATE CODE T2669

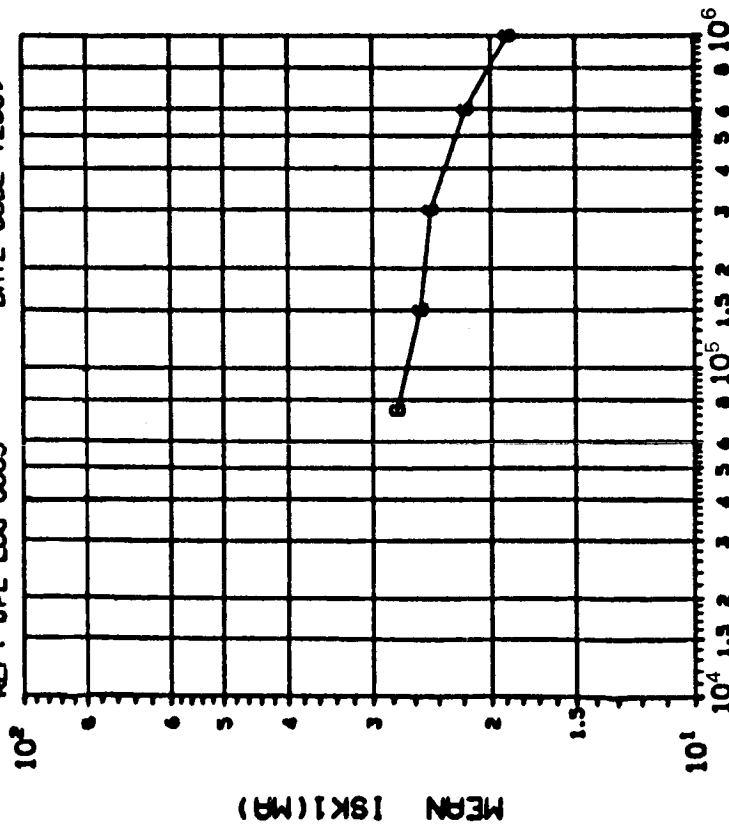


(5)VSAT1 (ISK=5MA) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
E	5.299	6.976	8.622
			600
			1000
			13.76

INITIAL MEAN VALUE VSAT1(MV) = $2.30 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0883 DATE CODE T2669



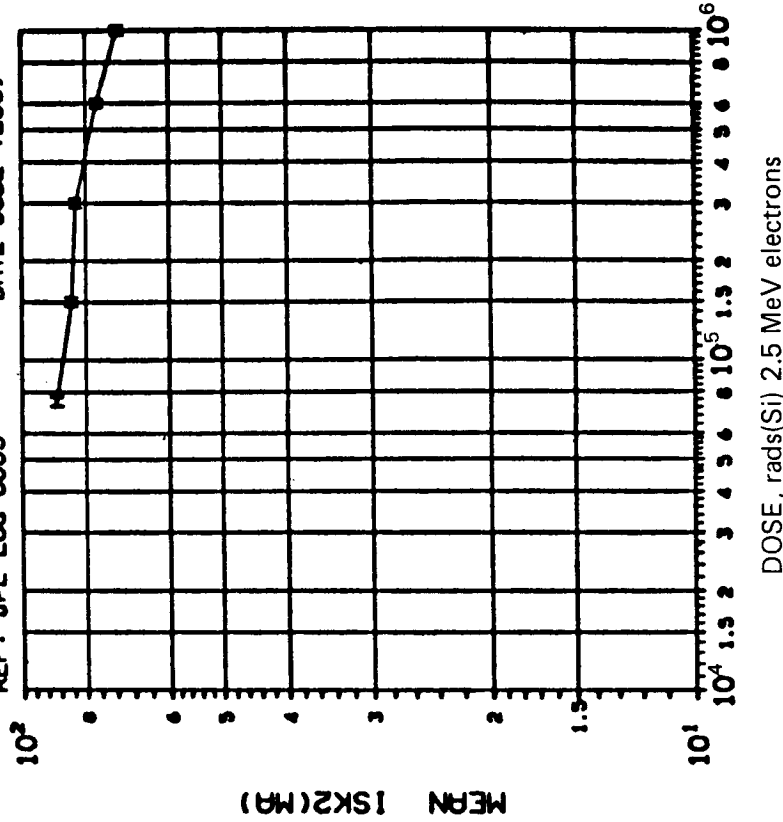
DOSE, rads(Si) 2.5 MeV electrons

(7)ISK1 (V0=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75
	150
	300
	1000
	.6755 .6361 .6999 .5624 .6389

INITIAL MEAN VALUE ISK1(MA) = 2.85×10^{-1}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0883 DATE CODE T2669



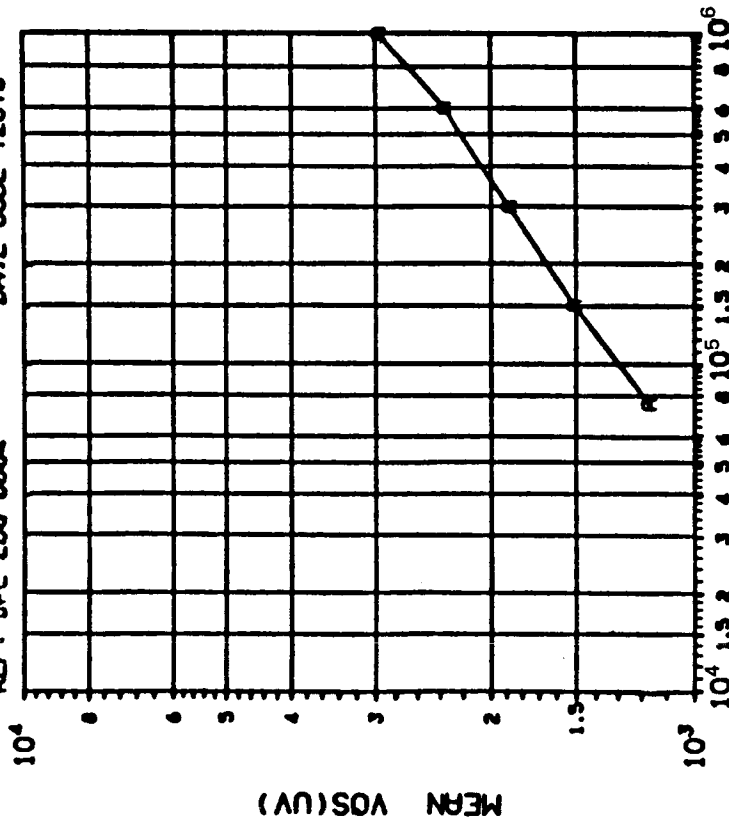
DOSE, rads(Si) 2.5 MeV electrons

(8)ISK2 (V0=1.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	150
	300
	1000
	2.413 2.336 1.606 1.957 1.814

INITIAL MEAN VALUE ISK2(MA) = 9.05×10^{-1}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 3 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0884 DATE CODE T2670

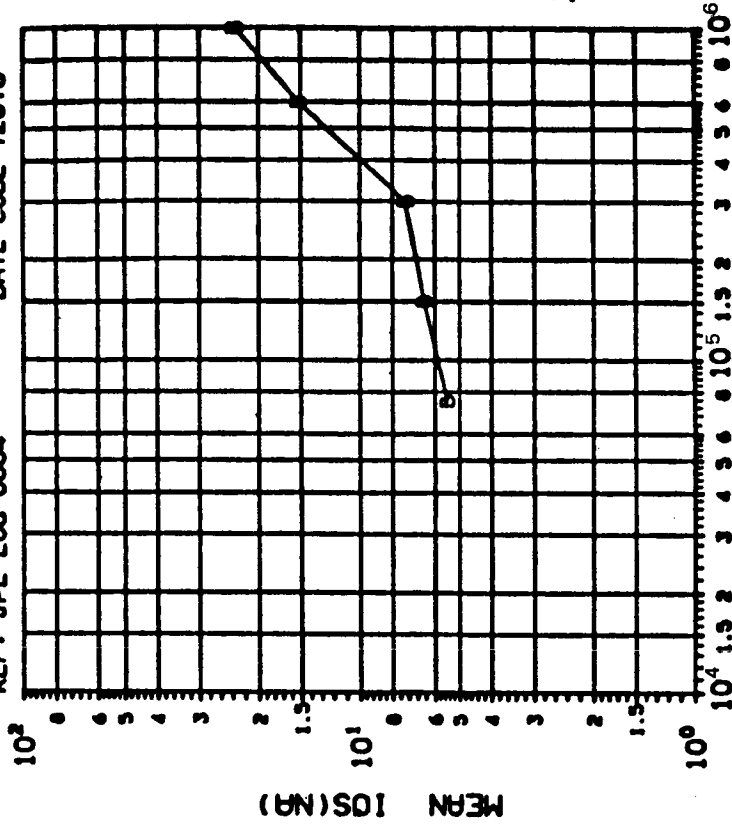


(1) VOS (V₀=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600 1000
A	250.7	256.4 311.0 363.4 473.0

INITIAL MEAN VALUE VOS(UV) = $8.34 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 3 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0884 DATE CODE T2670



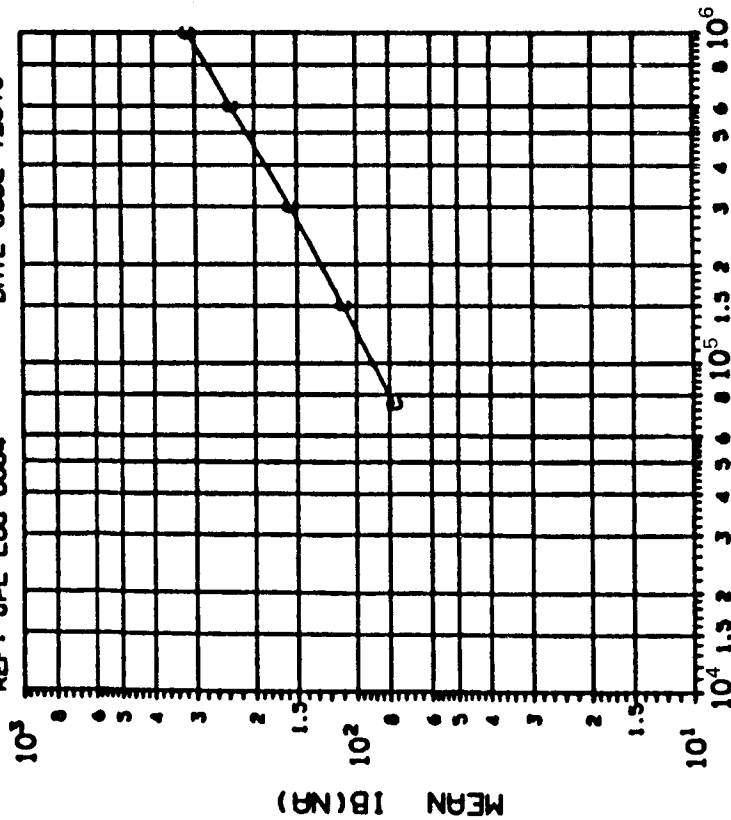
(2) IOS (V₀=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600 1000
B	1.486	.8445 1.107 3.319 3.536

INITIAL MEAN VALUE IOS(NA) = $5.42 \times 10^{+0}$

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DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0884 DATE CODE T2670



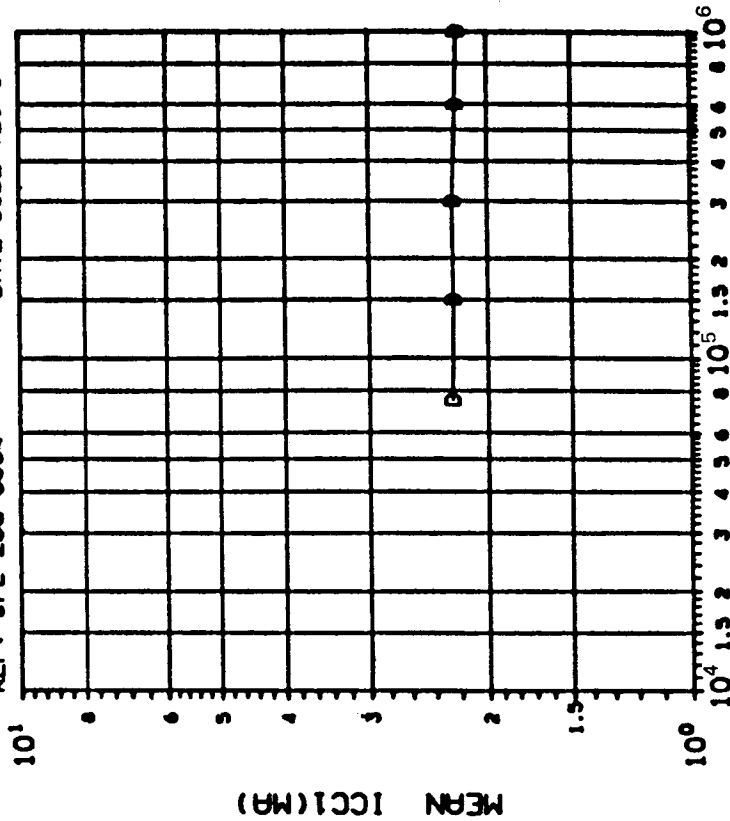
DOSE, rad(Si) 2.5 MeV electrons

(3) IB (V_O=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	150
	300	600
	1000	1000
	3.896	7.145
	10.06	14.75
	22.09	

INITIAL MEAN VALUE IB(NA) = $2.95 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0884 DATE CODE T2670



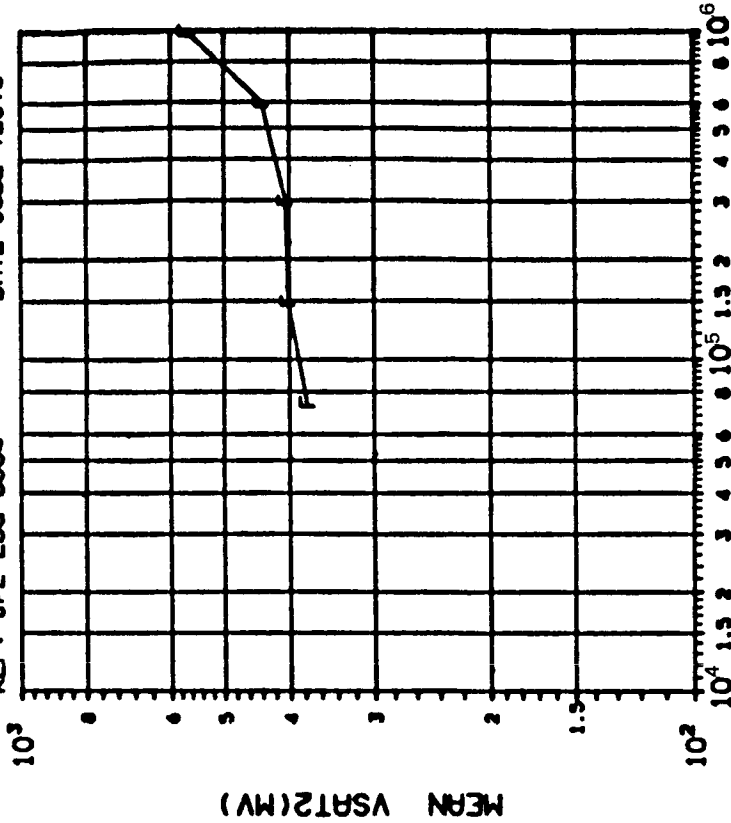
DOSE, rad(Si) 2.5 MeV electrons

(4) ICC1 (NO LOAD): IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75	150
	300	600
	1000	1000
	.0933	.0879
	.0881	.0913
	.0922	

INITIAL MEAN VALUE ICC1(NA) = $2.30 \times 10^{+0}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0884 DATE CODE T2670

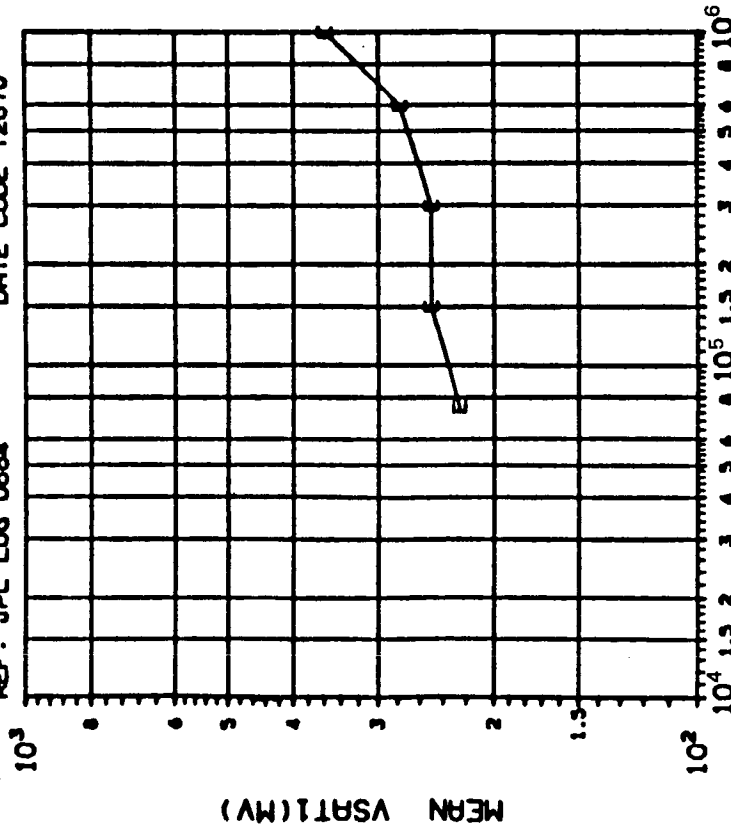


(6)VSAT2 (ISK=14MA) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75
	150
	300
	600
F	1000
	12.22
	21.22
	9.673
	14.99
	94.55

INITIAL MEAN VALUE VSAT2(MV) = $3.69 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 11-03-82
REF: JPL LOG 0884 DATE CODE T2670

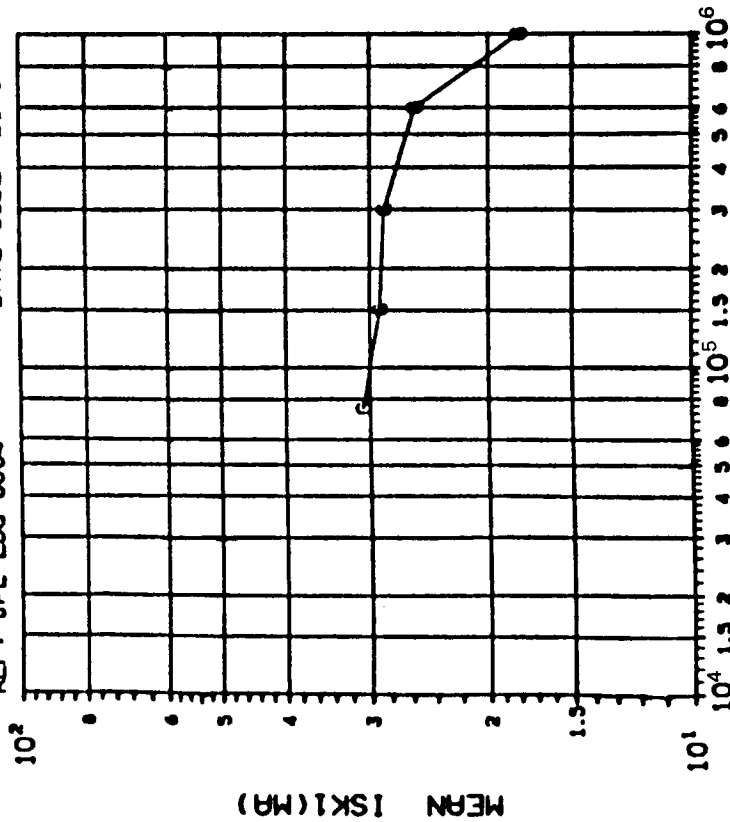


(3)VSAT1 (ISK=5MA) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75
	150
	300
	600
E	1000
	7.660
	17.74
	6.877
	12.06
	42.26

INITIAL MEAN VALUE VSAT1(MV) = $2.18 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0884 DATE CODE T2670



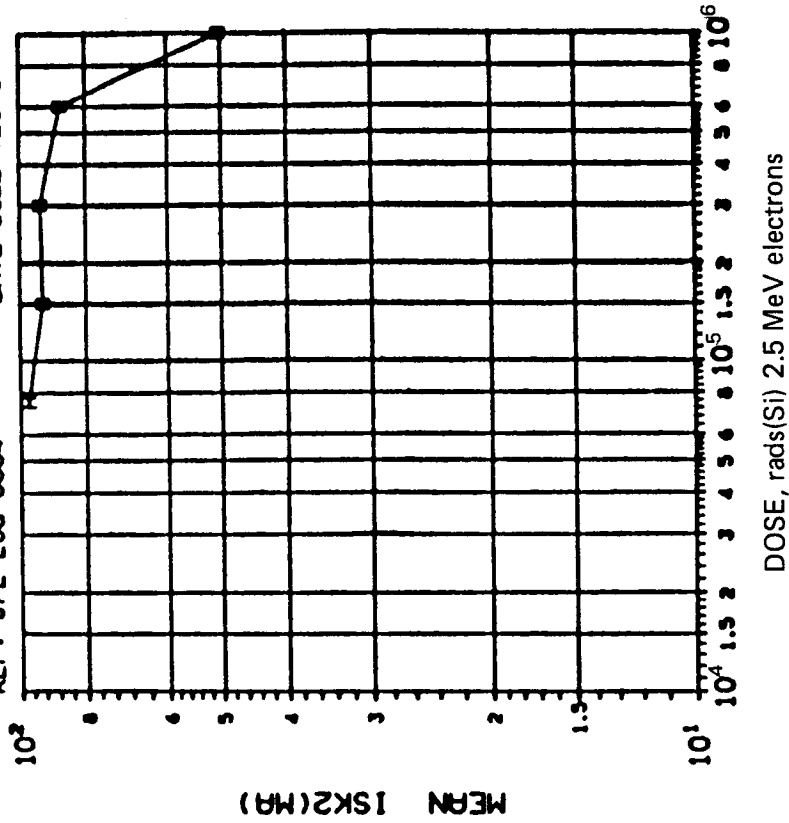
DOSE, rads(Si) 2.5 MeV electrons

(7)ISK1 (V0=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600 1000
G	1.565	1.850 1.006 1.156 3.102

INITIAL MEAN VALUE ISK1(MA) = 3.09×10^{-4}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 5 DEVICES TEST DATE 11-03-82
 REF: JPL LOG 0884 DATE CODE T2670



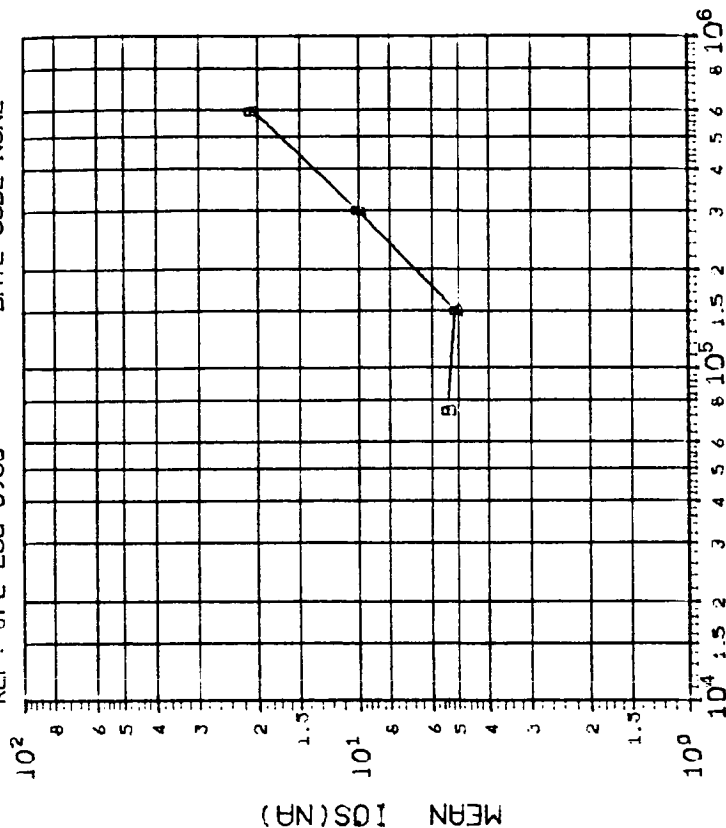
DOSE, rads(Si) 2.5 MeV electrons

(8)ISK2 (V0=1.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600 1000
H	2.151	5.295 1.983 2.822 21.80

INITIAL MEAN VALUE ISK2(MA) = 9.86×10^{-4}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 03-17-83
REF: JPL LOG 0980 DATE CODE NONE

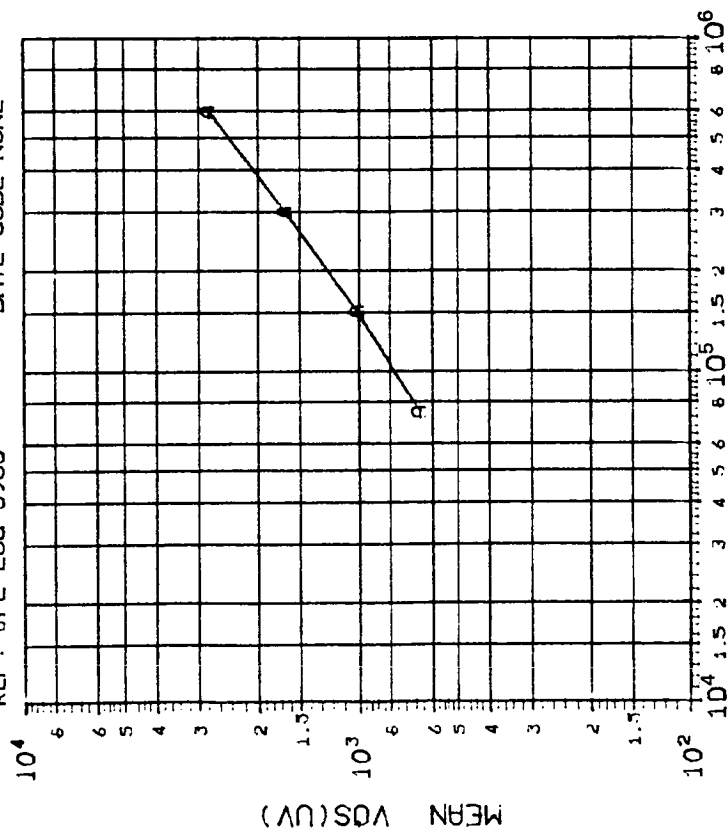


DOSE, rads(Si) 2.5 MeV electrons
(2)IOS (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
	600
B	1000
	3.552
	4.153
	1.677
	7.911

INITIAL MEAN VALUE IOS(NA) = 5.51X10¹⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 5 DEVICES TEST DATE 03-17-83
REF: JPL LOG 0980 DATE CODE NONE

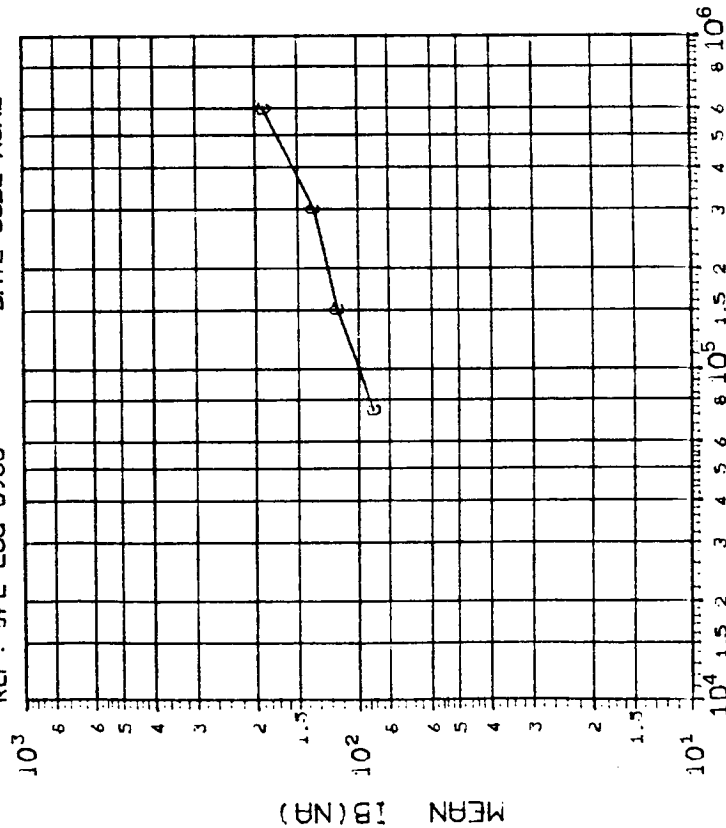


DOSE, rads(Si) 2.5 MeV electrons
(1)VOS (VO=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
	600
A	1000
	1044.
	1048.
	1246.
	1777.

INITIAL MEAN VALUE VOS(UV) = 1.68X10¹²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AND 5 DEVICES TEST DATE 03-17-83
 REF: JPL LOG 0980 DATE CODE NONE



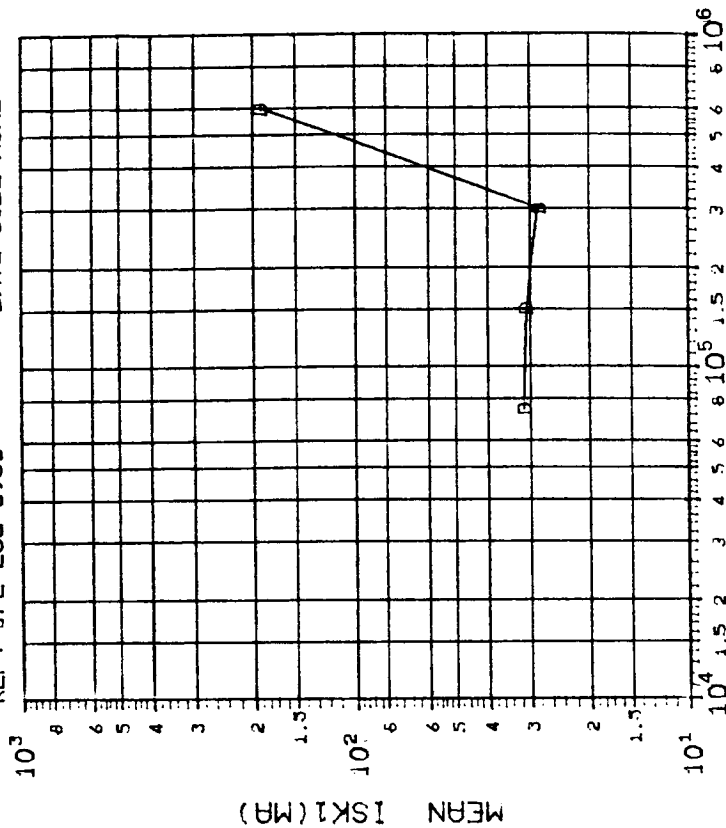
DOSE, rads(Si) 2.5 MeV electrons

(3)1B (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	300
C	21.17	49.41
	600	1000
	71.95	***

INITIAL MEAN VALUE IB(NA) = $4.65 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AND 5 DEVICES TEST DATE 03-17-83
 REF: JPL LOG 0980 DATE CODE NONE



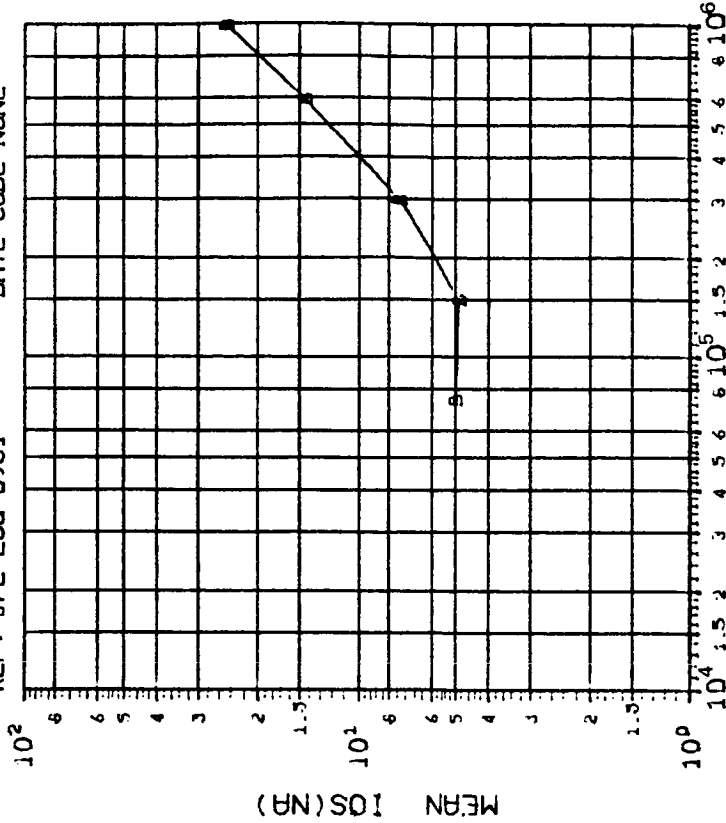
DOSE, rads(Si) 2.5 MeV electrons

(4)1SK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	300
D	.6519	.9553
	362.7	***

INITIAL MEAN VALUE ISK1(MA) = $3.48 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0981 DATE CODE NONE

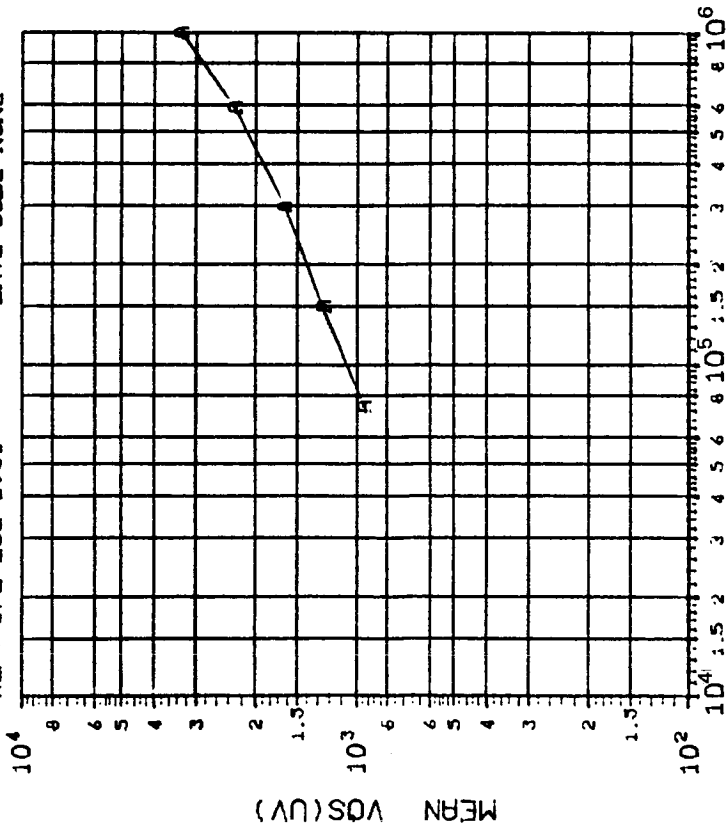


DOSE, rads(Si) 2.5 MeV electrons
(2)IOS (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
B	75	150	300
	600	1000	
	1.693	2.059	1.161
	2.515	2.946	

INITIAL MEAN VALUE IOS(NA) = 5.09X10¹⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0981 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons
(1)VOS (V0=0.5V) IN UVOLTS: VS DOSE

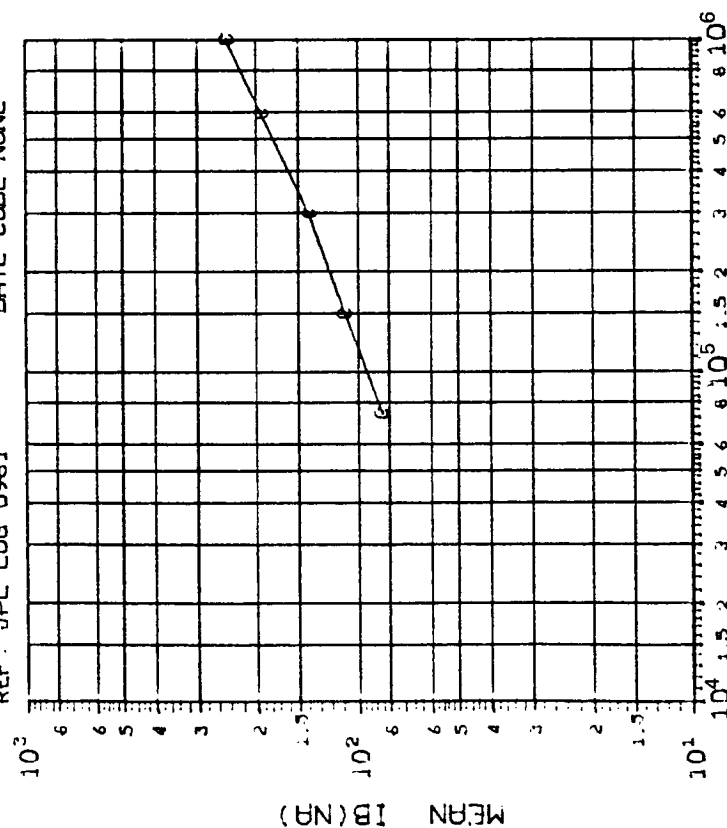
TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
A	75	150	300
	600	1000	
	382.0	419.2	432.3
	450.0	551.7	

INITIAL MEAN VALUE VOS(UV) = 5.71X10¹²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0981 DATE CODE NONE



MEAN IB (NA)

DOSE, rads(Si) 2.5 MeV electrons

(311B (VO=0.5V) IN NA: VS DOSE

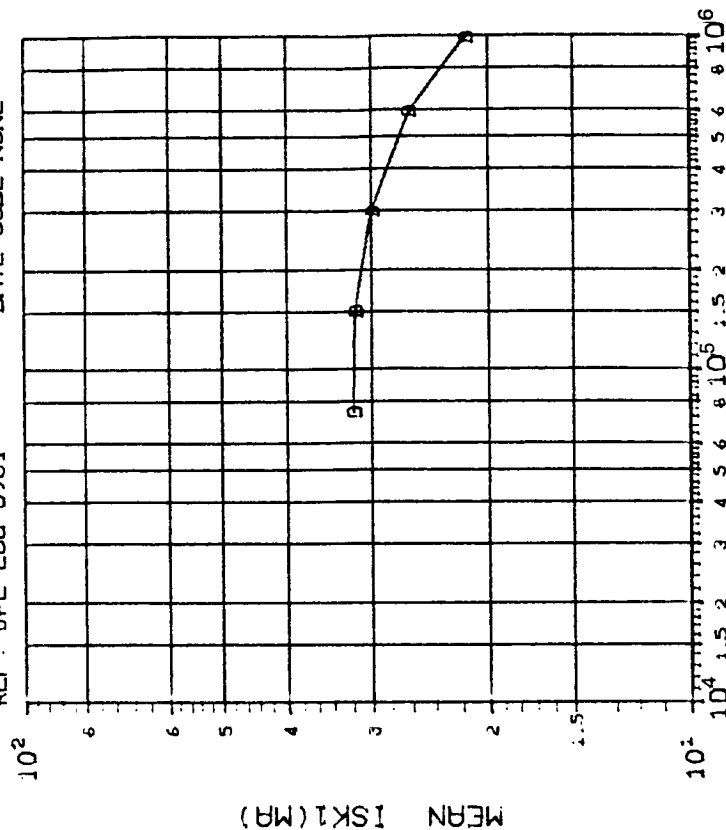
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600 1000
C	9.947	13.33 21.71 34.49 40.67

INITIAL MEAN VALUE IB(NA) = 4.31X10¹¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0981 DATE CODE NONE



MEAN ISK1 (MA)

DOSE, rads(Si) 2.5 MeV electrons

(411SK1 (VO=0.6V) IN MA: VS DOSE

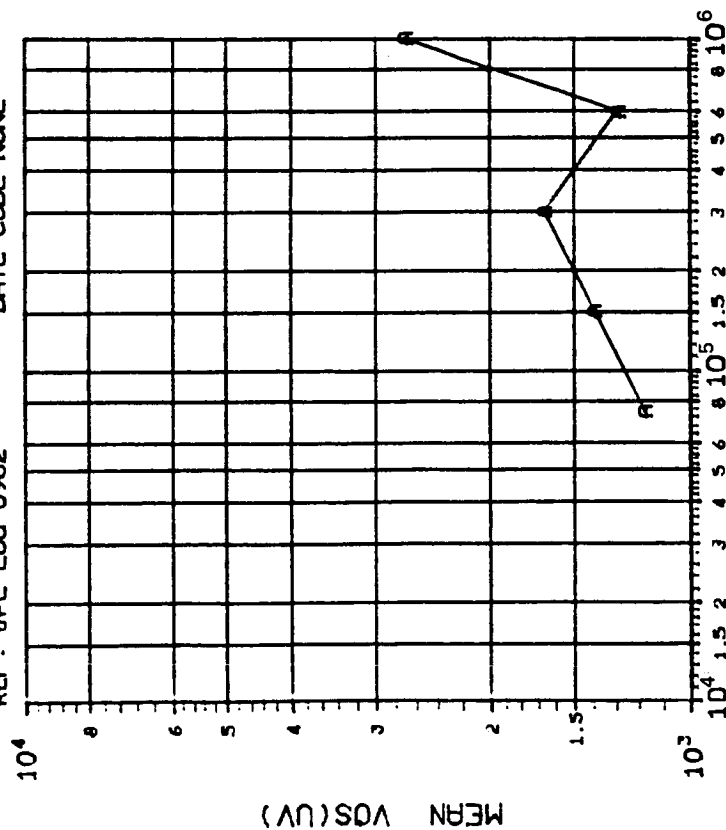
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600 1000
D	.6671	.5146 .5124 .6865 1.798

INITIAL MEAN VALUE ISK1(MA) = 3.54X10¹¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0982 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(1) VOS (V_O=0.5V) IN UVOLTS: VS DOSE

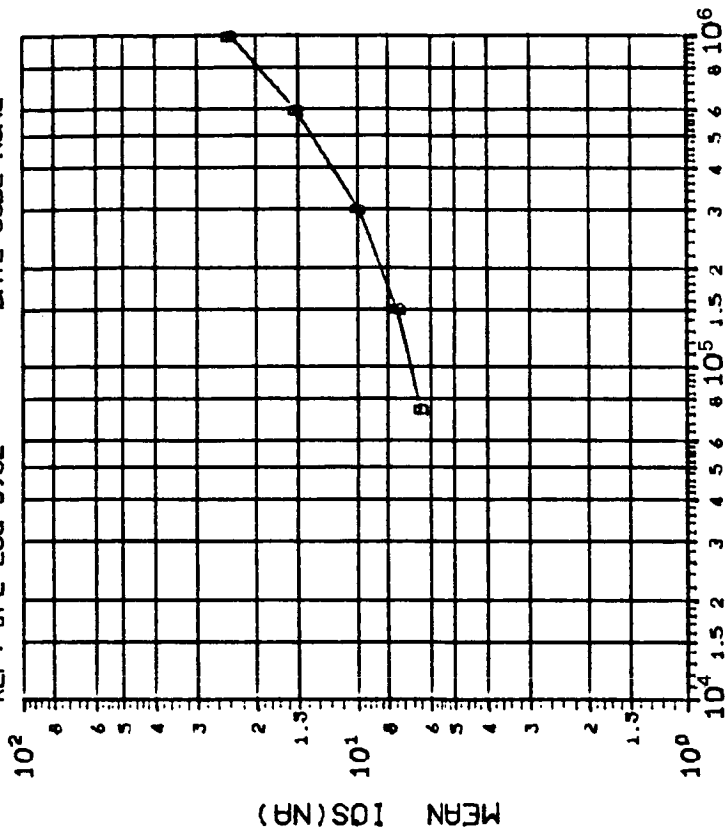
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
	600
	1000
	1039.
	1019.
	1025.

INITIAL MEAN VALUE VOS(UV) = 9.29×10^{12}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0982 DATE CODE NONE



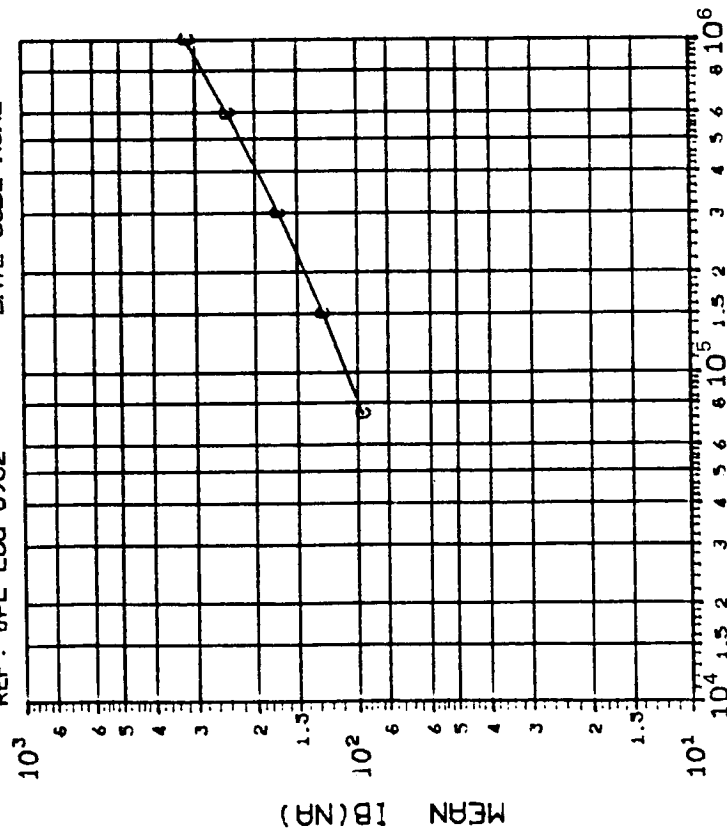
DOSE, rads(Si) 2.5 MeV electrons

(2) IOS (V_O=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
	600
	1000
	2.086
	1.833
	2.797

INITIAL MEAN VALUE IOS(NA) = 6.09×10^{10}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0982 DATE CODE NONE



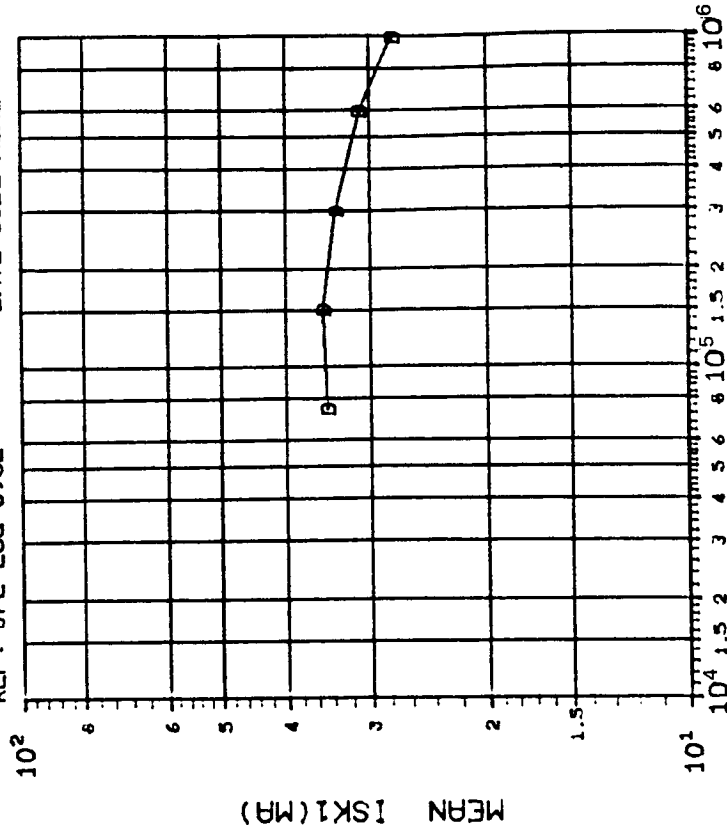
DOSE, rads(Si) 2.5 MeV electrons

(311B (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	150
	300	600
	1000	
	16.28	23.43
	35.91	55.25
	74.92	

INITIAL MEAN VALUE IB(NA) = $5.06 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0982 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(411SK1 (VO=0.6V) IN MA: VS DOSE

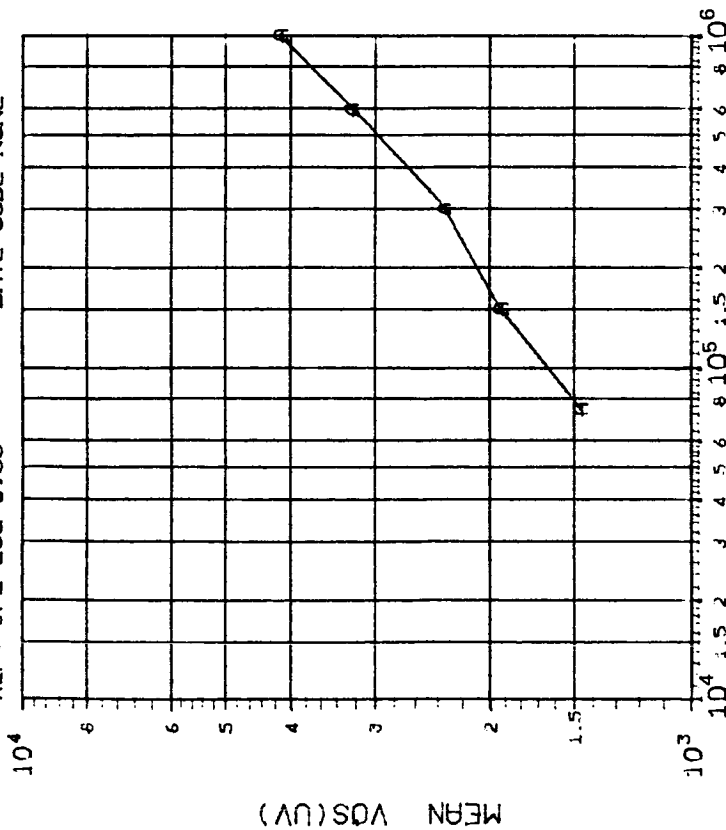
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75	150
	300	600
	1000	
	1.811	2.321
	2.646	3.000
	5.056	

INITIAL MEAN VALUE ISK1(MA) = $3.84 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-04-83

REF: JPL LOG 0983 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(1)VOS (VO=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS				
CURVE	DOSE, kilorads(Si)			
	75	150	300	600 1000
A	808.4	792.2	968.6	1313. 1346.

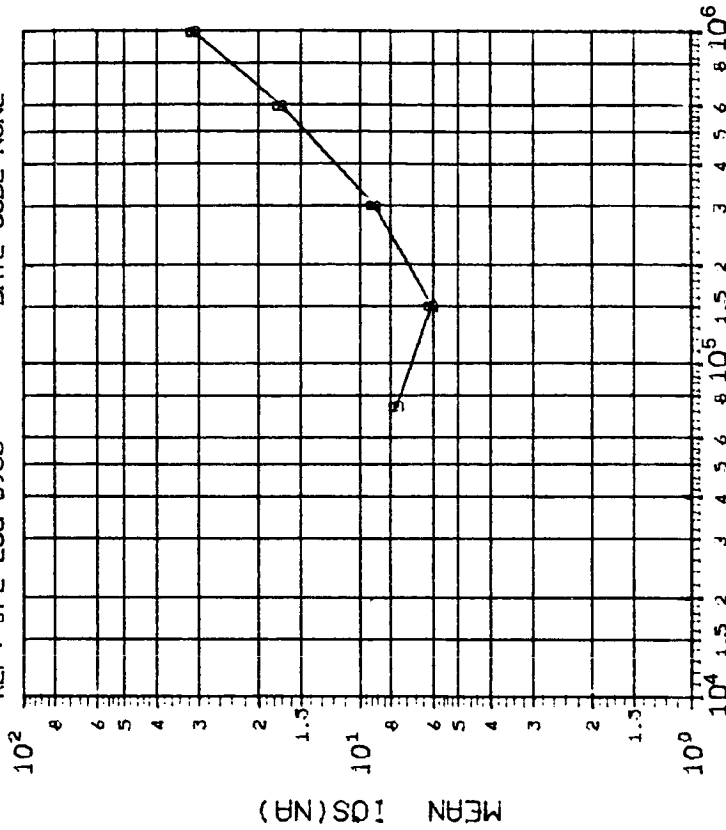
INITIAL MEAN VALUE VOS(UV) = 8.97×10^{12}

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DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-04-83

REF: JPL LOG 0983 DATE CODE NONE



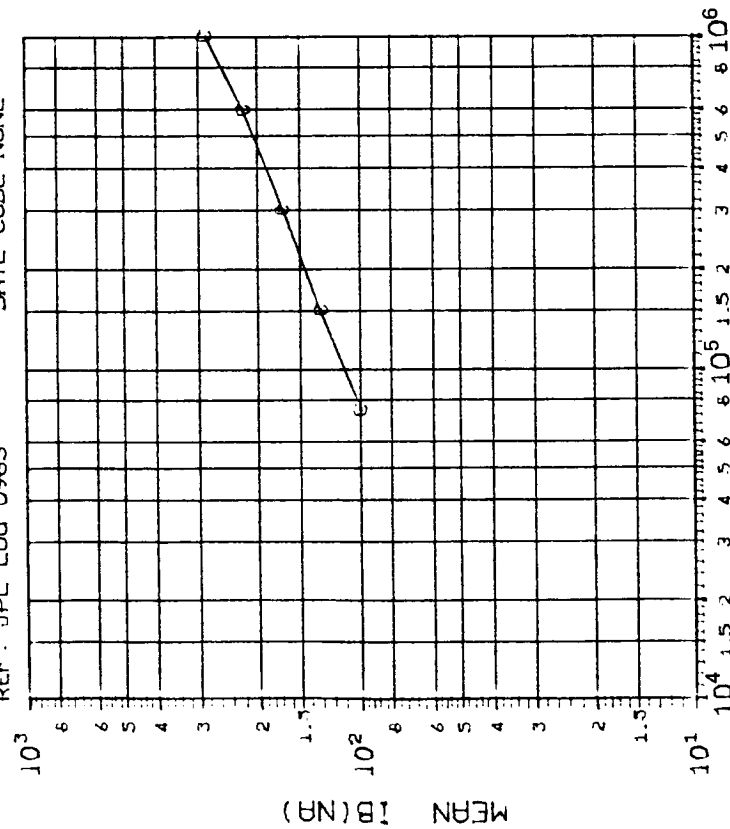
DOSE, rads(Si) 2.5 MeV electrons

(2)IOS (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS				
CURVE	DOSE, kilorads(Si)			
	75	150	300	600 1000
B	7.639	1.486	5.771	7.856 13.98

INITIAL MEAN VALUE IOS(NA) = 5.42×10^{10}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-04-83
 REF: JPL LOG 0983 DATE CODE NONE



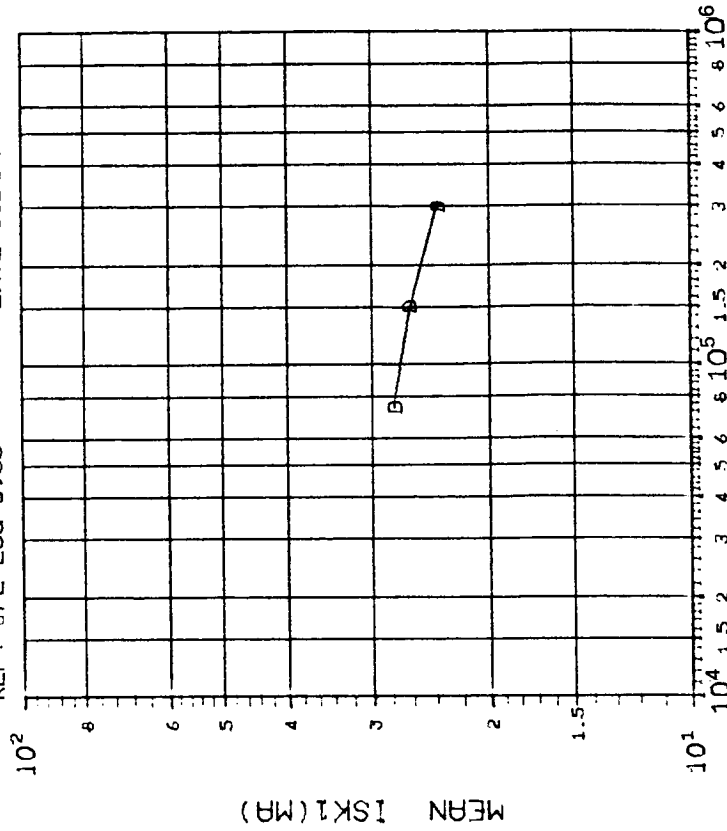
DOSE, rads(Si) 2.5 MeV electrons

(3)1B (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
	300	600
C	10.32 12.63 19.36 31.13 42.12	

INITIAL MEAN VALUE IB(NA) = $4.89 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-04-83
 REF: JPL LOG 0983 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(4)1SK1 (VO=0.6V) IN MA: VS DOSE

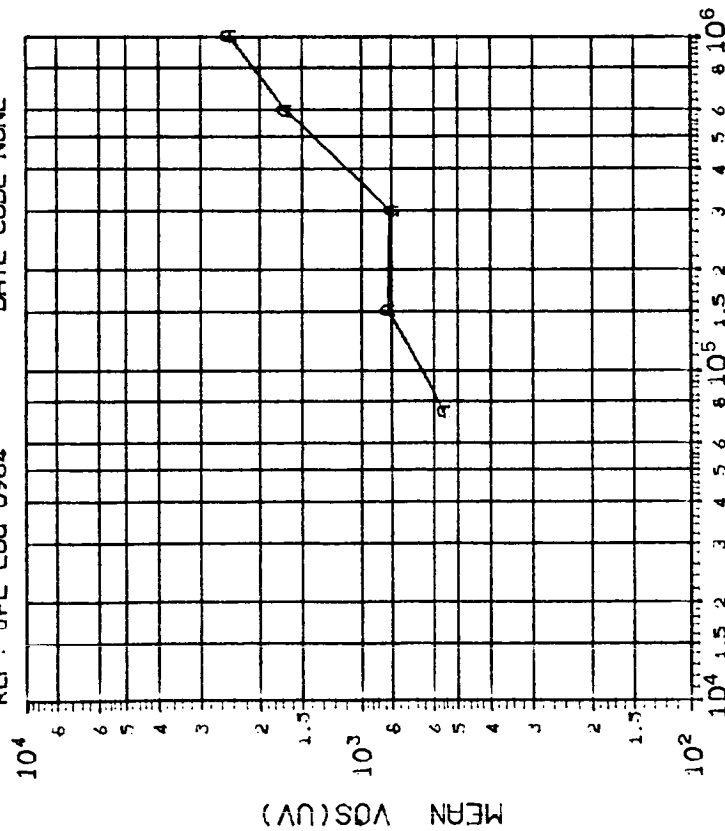
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
	300	600
D	2.697 3.657 4.734 ****	****

INITIAL MEAN VALUE ISK1(MA) = $3.07 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-04-83

REF: JPL LOG 0984 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(1) VOS (V₀=0.5V) IN UVOLTS: VS DOSE

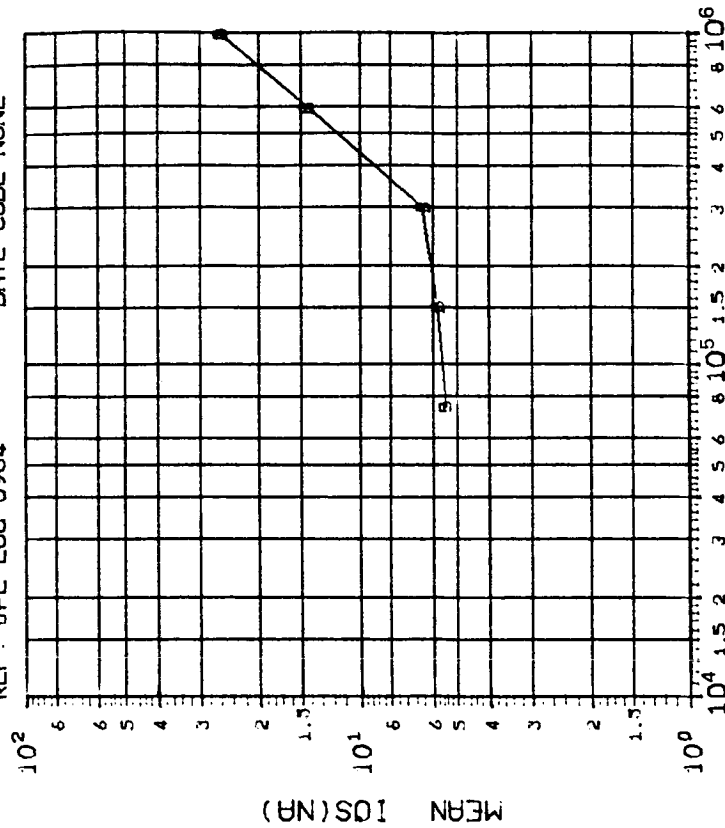
TABLE OF NORMAL STANDARD DEVIATIONS				
CURVE	DOSE, kilorads(Si)			
	75	150	300	600 1000
A	296.0	295.9	905.0	440.1 595.4

INITIAL MEAN VALUE VOS(UV) = 2.62X10²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-04-83

REF: JPL LOG 0984 DATE CODE NONE



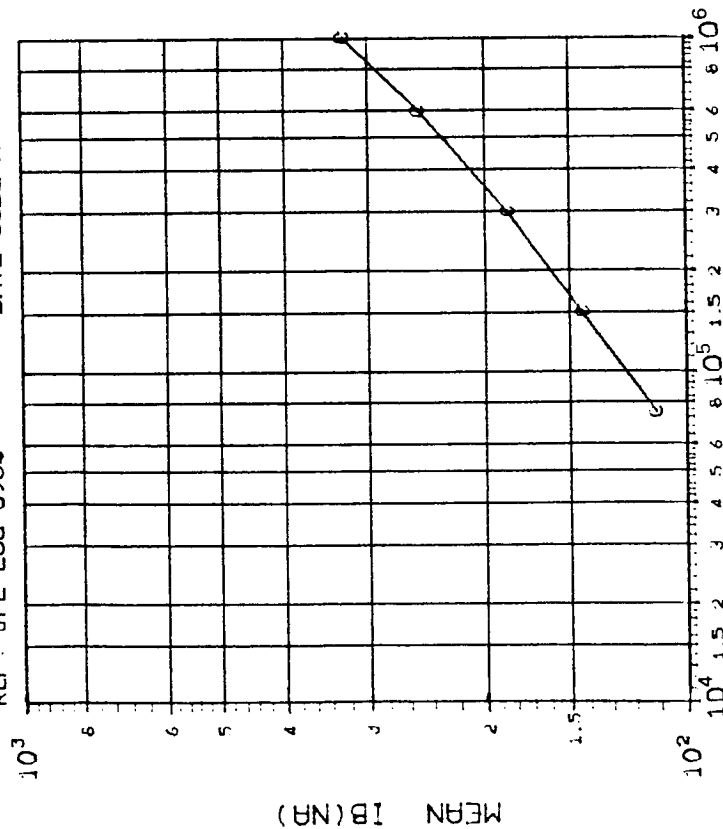
DOSE, rads(Si) 2.5 MeV electrons

(2) IOS (V₀=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS				
CURVE	DOSE, kilorads(Si)			
	75	150	300	600 1000
B	1.526	2.119	7.998	7.353 6.272

INITIAL MEAN VALUE IOS(NA) = 4.85X10⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-04-83
 REF: JPL LOG 0984 DATE CODE NONE

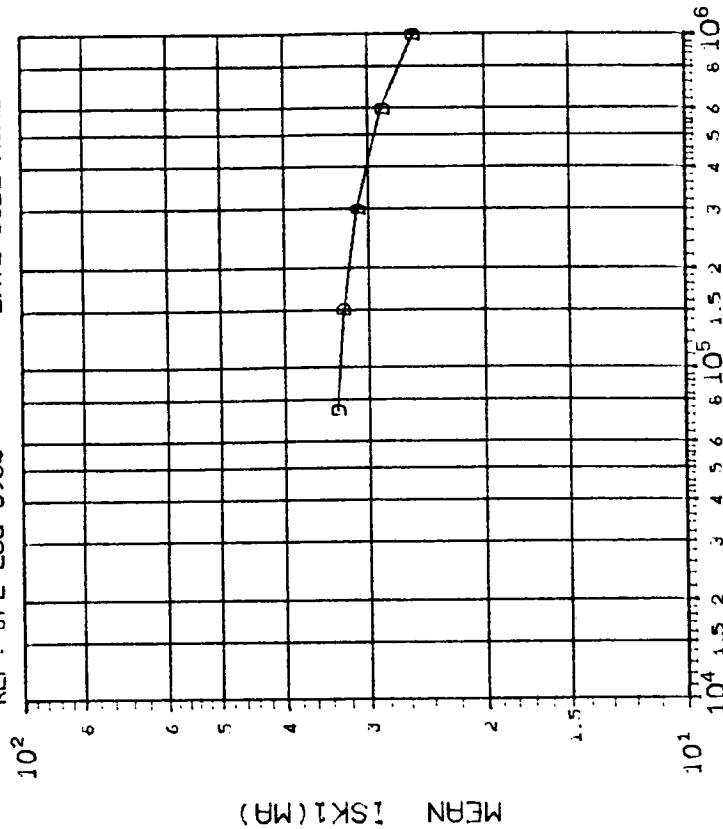


(3) IB (V_O=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
C	1000
	15.08
	17.26
	17.26

INITIAL MEAN VALUE IB(NA) = 5.76X10²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-04-83
 REF: JPL LOG 0984 DATE CODE NONE

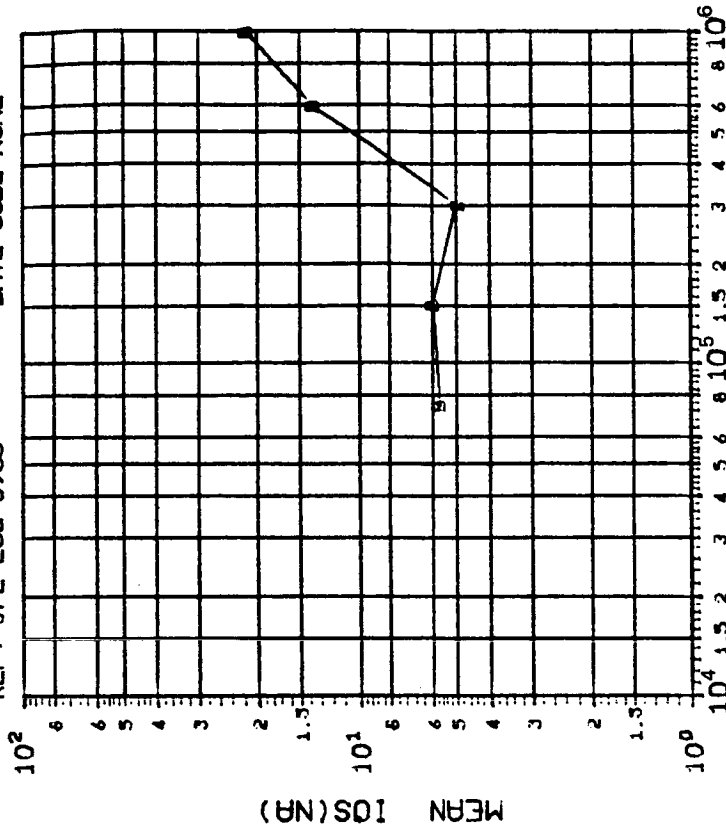


(4) ISK1 (V_O=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
D	1000
	.6541
	.7285
	.5886
D	.6723
	1.632
	1.632
	1.632

INITIAL MEAN VALUE ISK1(MA) = 3.57X10¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0985 DATE CODE NONE

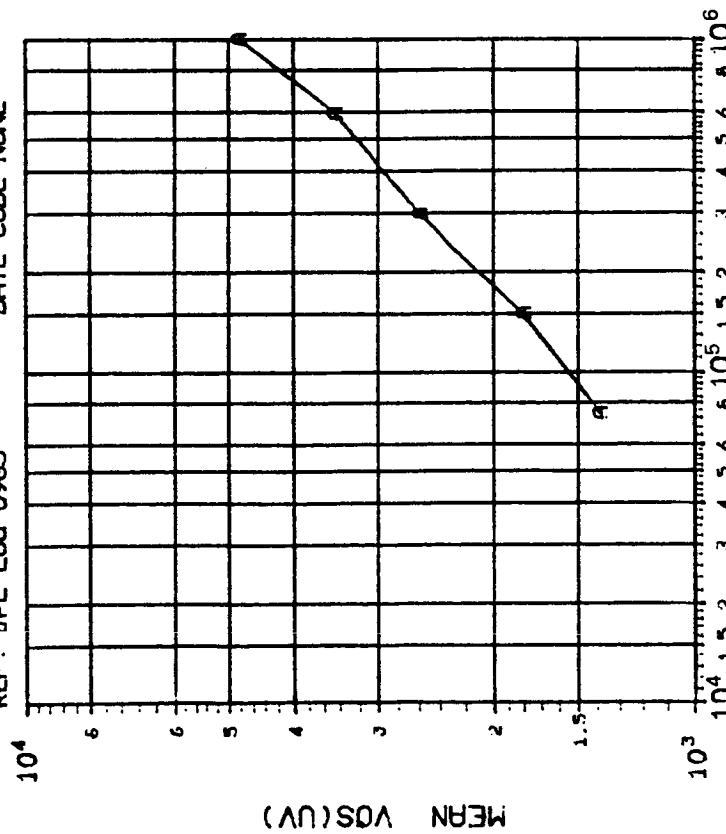


(2)IOS (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
	600
B	1000
	2.159
	5.792
	44.13
B	24.63
	30.69

INITIAL MEAN VALUE IOS(NA) = 6.15X10⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0985 DATE CODE NONE



(1)VOS (V0=0.5V) IN VOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
	600
A	1000
	790.5
	804.1
	1186.1
A	1081.1
	1410.

INITIAL MEAN VALUE VOS(UV) = 9.82X10¹²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0985 DATE CODE NONE

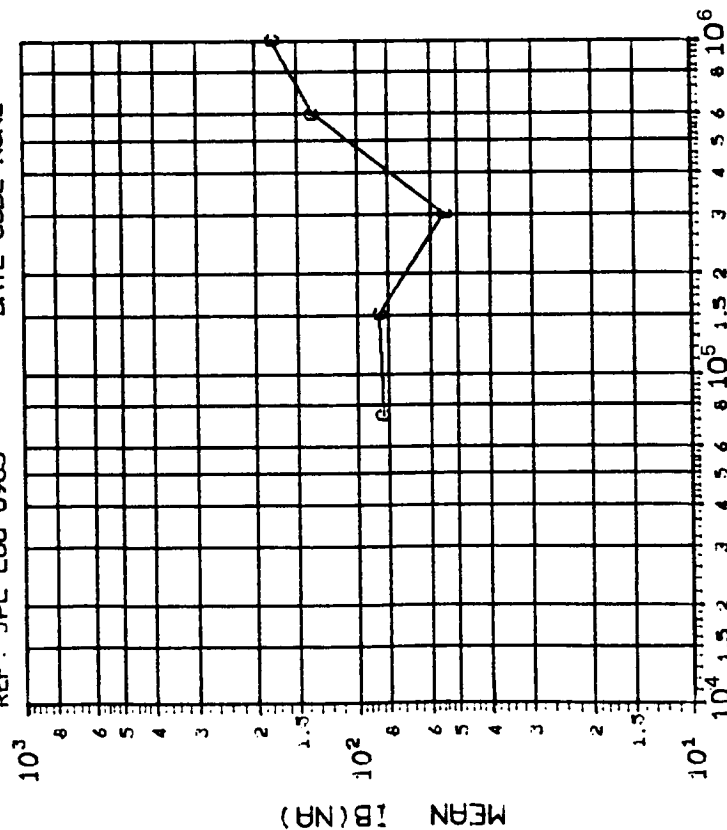


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
C	1000
	1.19
	77.63
	234.2
C	164.4
	186.6
	186.6
	186.6

INITIAL MEAN VALUE IB(NA) = 4.55X10¹¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0985 DATE CODE NONE

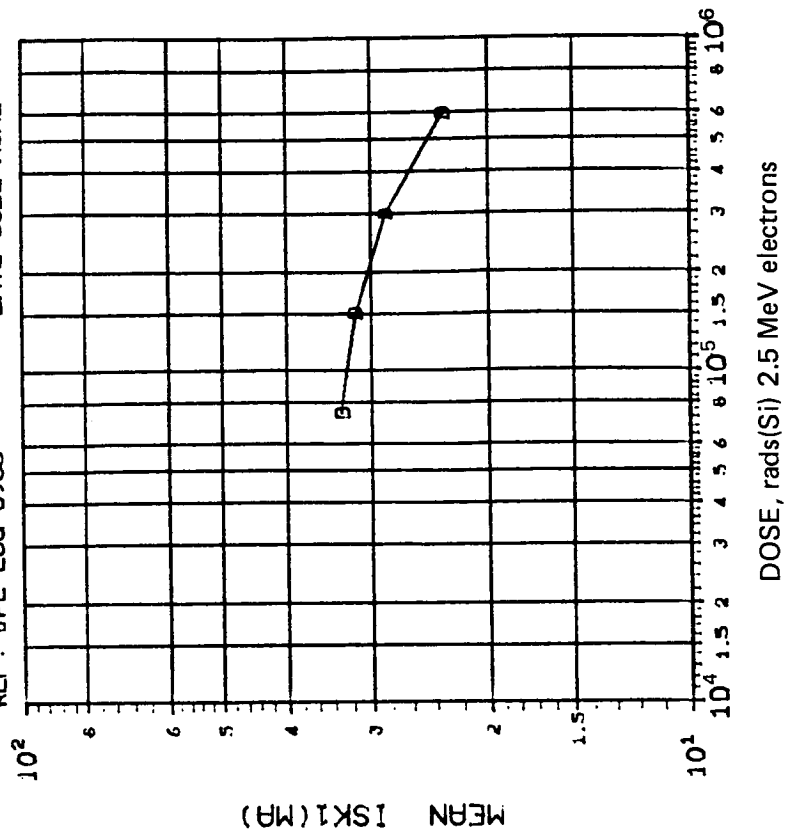
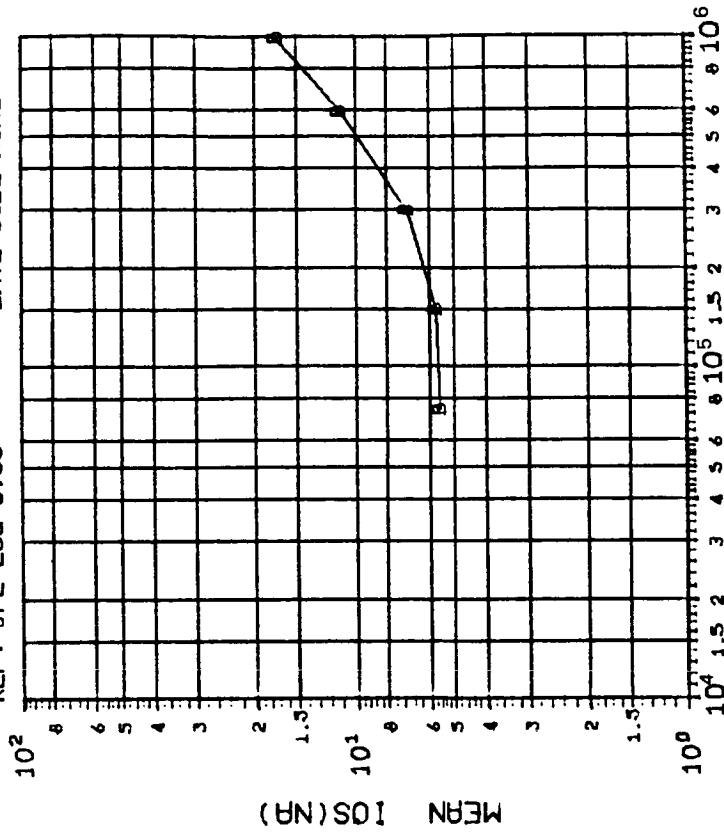


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
D	1000
	1.482
	1.008
	1.116
D	2.523
	2.523
	2.523
	2.523

INITIAL MEAN VALUE ISK1(MA) = 3.58X10¹¹

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DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0986 DATE CODE NONE

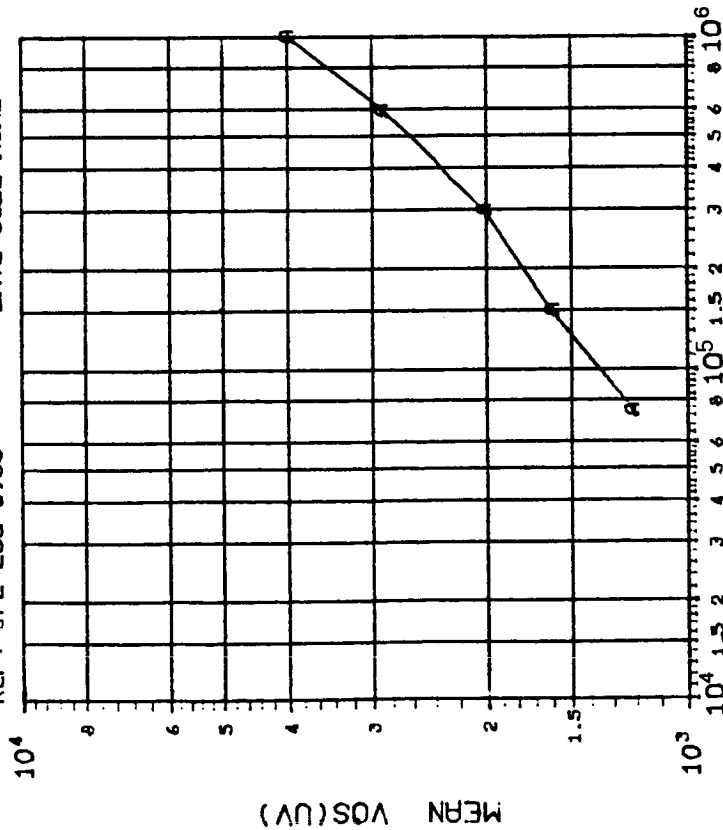


(2)IOS (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300 600 1000
B	2.262	2.740	7.536 15.62 23.52

INITIAL MEAN VALUE IOS(NA) = 5.29×10^{10}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0986 DATE CODE NONE

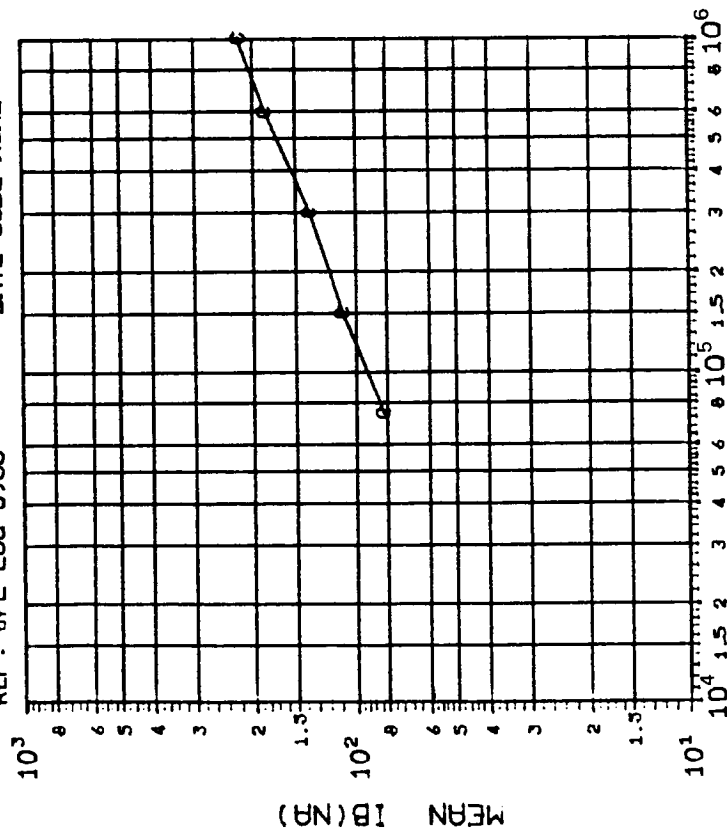


(1)VOS (VO=0.5V) IN VOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300 600 1000
A	367.0	456.2	519.4 792.6 1118.

INITIAL MEAN VALUE VOS(UV) = 8.37×10^{12}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0986 DATE CODE NONE



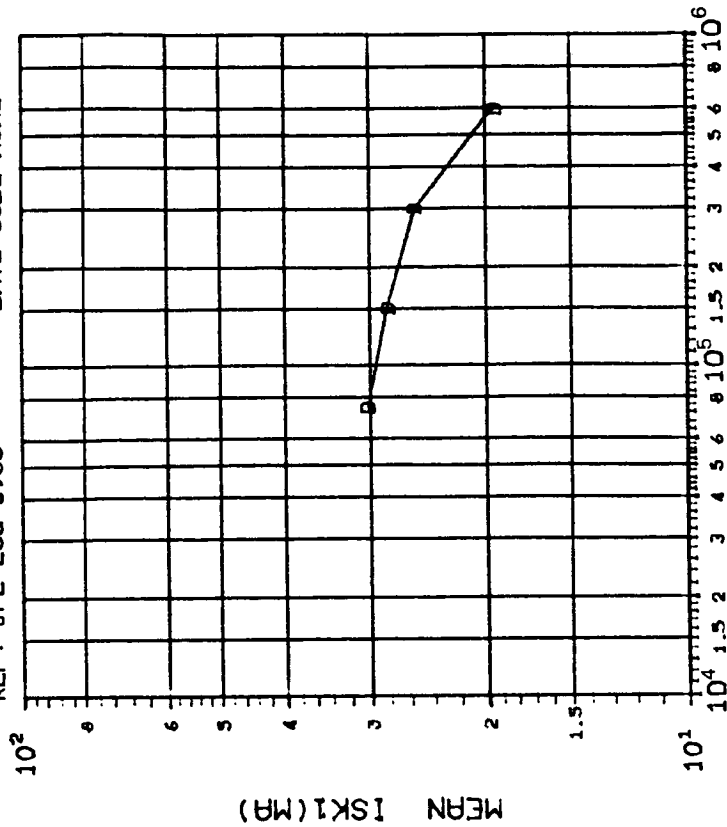
DOSE, rad(Si) 2.5 MeV electrons

(31)B (V_O=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
C	1000
	20.00
	26.02
	43.25
C	61.94
	77.32

INITIAL MEAN VALUE IB(NA) = 4.09X10⁻¹¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0986 DATE CODE NONE



DOSE, rad(Si) 2.5 MeV electrons

(41)SK1 (V_O=0.6V) IN MA: VS DOSE

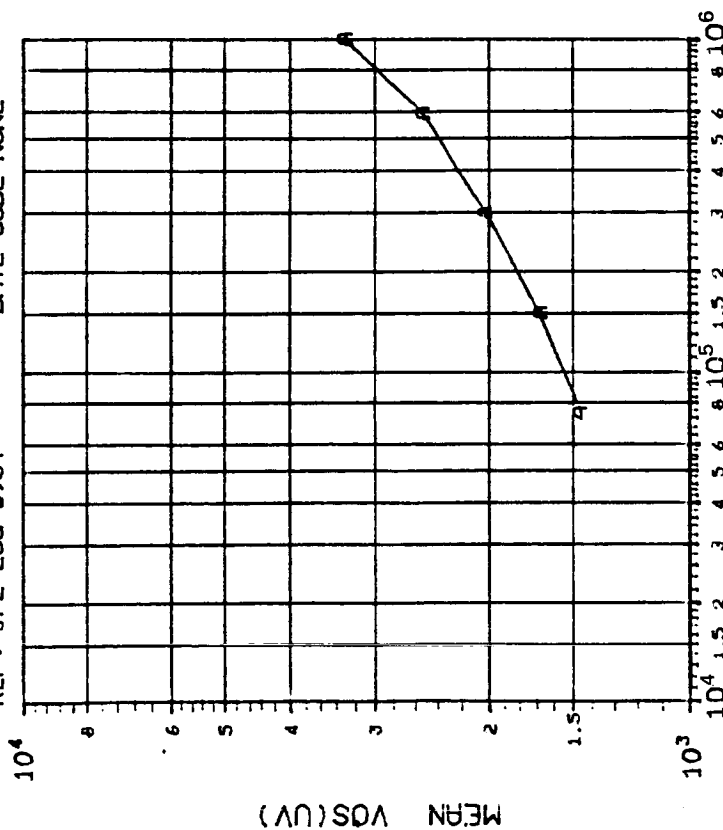
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
D	1000
	3.526
	3.995
	4.182
D	6.309
	6.309
	6.309
	6.309

INITIAL MEAN VALUE ISK1(MA) = 3.24X10⁻¹¹

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 5 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0987 DATE CODE NONE



(1)VOS (VO=0.5V) IN VOLTS: VS DOSE

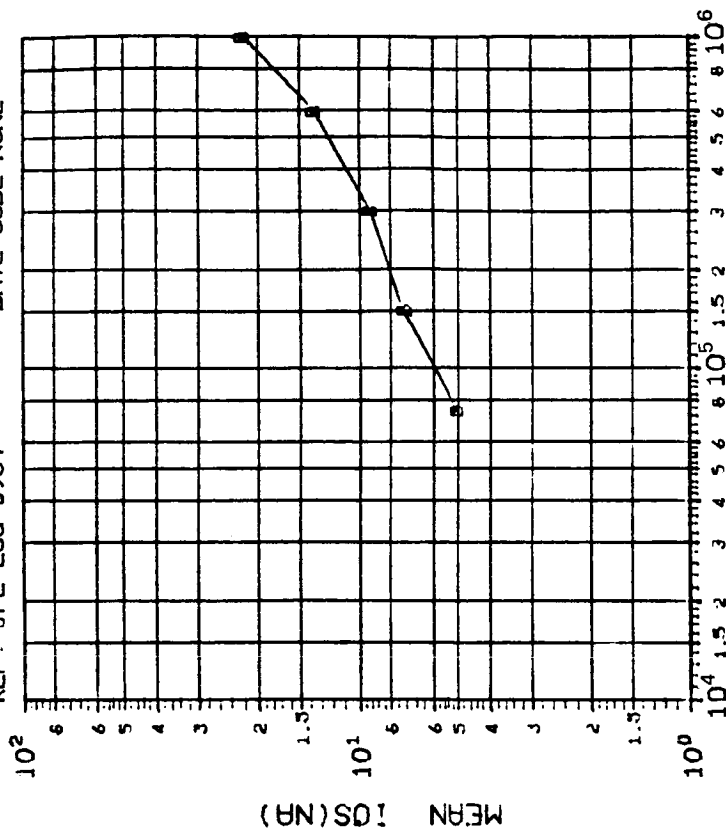
CURVE	DOSE, kilorads(Si)				
	75	150	300	600	1000
A	827.0	783.7	740.2	686.9	952.6

INITIAL MEAN VALUE VOS(UV) = 1.11X10³

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 5 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0987 DATE CODE NONE

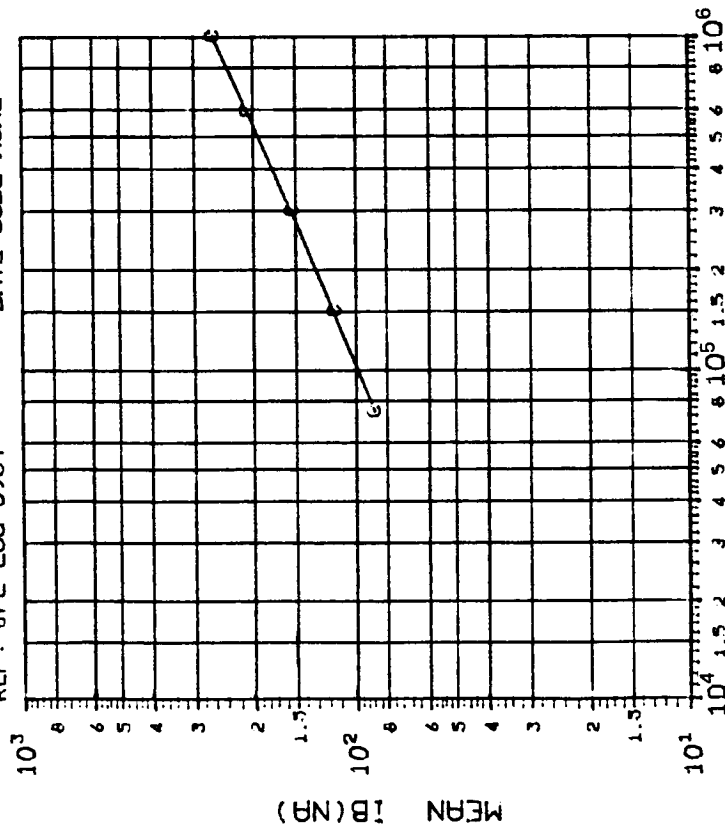


(2)IOS (VO=0.5V) IN NA: VS DOSE

CURVE	DOSE, kilorads(Si)				
	75	150	300	600	1000
B	1.312	1.602	1.974	2.605	4.486

INITIAL MEAN VALUE IOS(NA) = 4.76X10²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AND 5 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0987 DATE CODE NONE

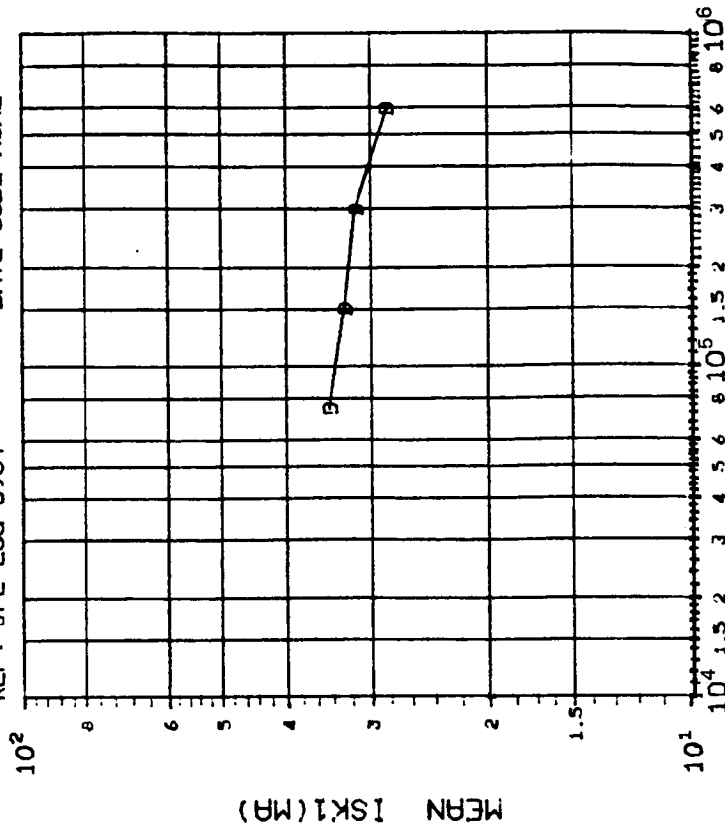


DOSE, rads(Si) 2.5 MeV electrons
(311)B (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
	1000
15.08 22.61 31.72 43.63 58.61	

INITIAL MEAN VALUE IB(NA) = $4.29 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AND 5 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0987 DATE CODE NONE

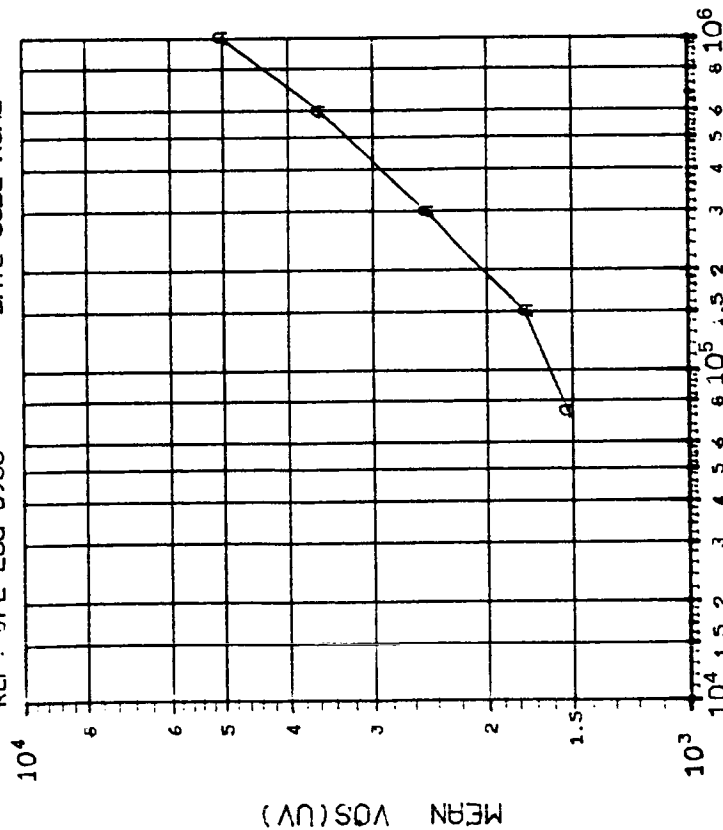


DOSE, rads(Si) 2.5 MeV electrons
(411)SK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
	1000
2.174 2.807 1.972 3.261 ***	

INITIAL MEAN VALUE ISK1(MA) = $3.62 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0988 DATE CODE NONE



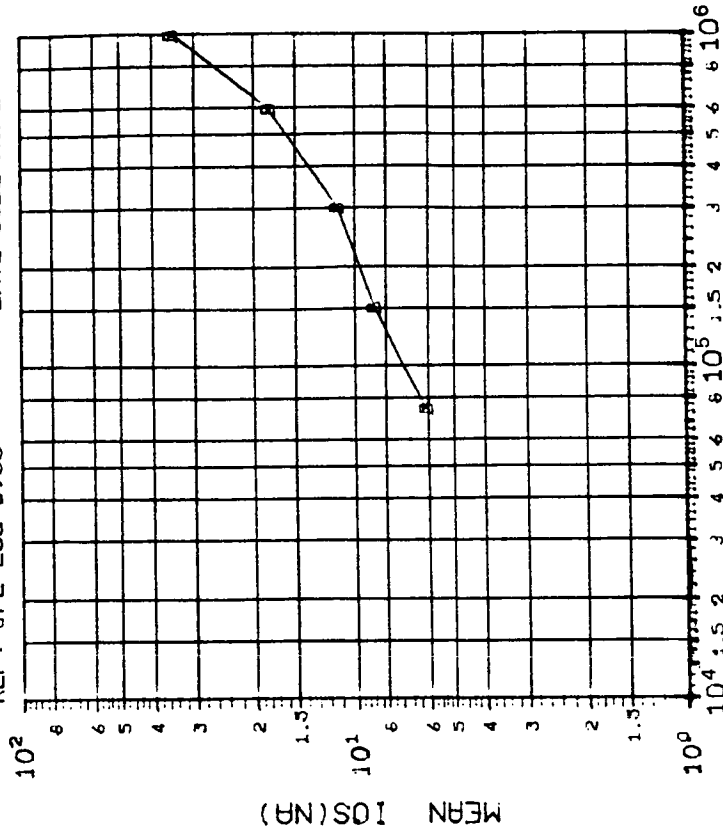
DOSE, rad(Si) 2.5 MeV electrons

(1) VOS (V_O=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
	600
	1000
	1144.
	1469.
	1615.
	2102.
	2788.

INITIAL MEAN VALUE VOS(UV) = $4.95 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0988 DATE CODE NONE



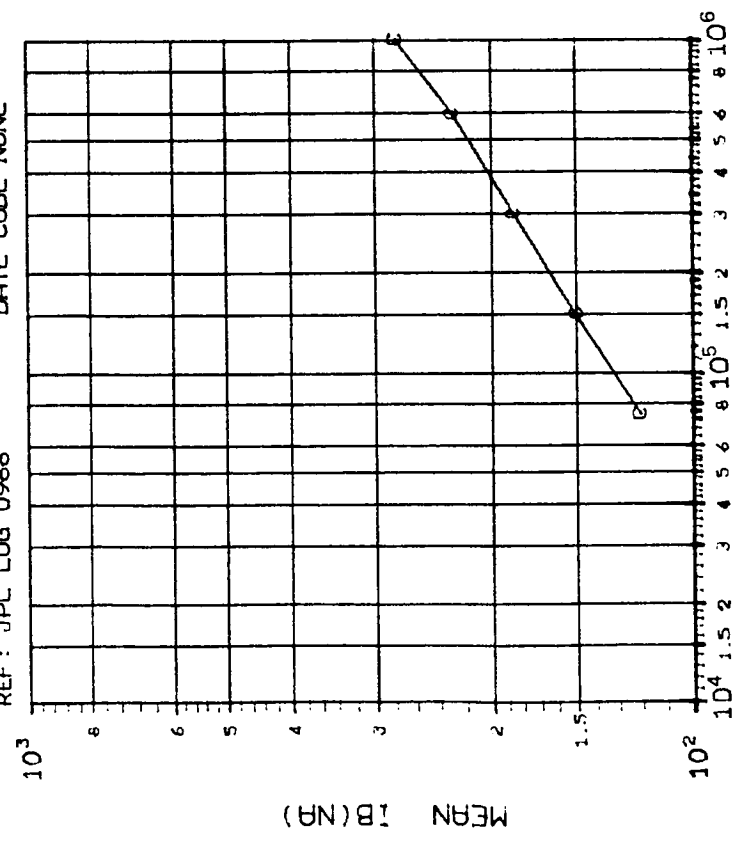
DOSE, rad(Si) 2.5 MeV electrons

(2) IOS (V_O=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
	600
	1000
	3.211
	4.488
	6.020
	10.76
	16.37

INITIAL MEAN VALUE IOS(NA) = $2.89 \times 10^{+0}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0988 DATE CODE NONE



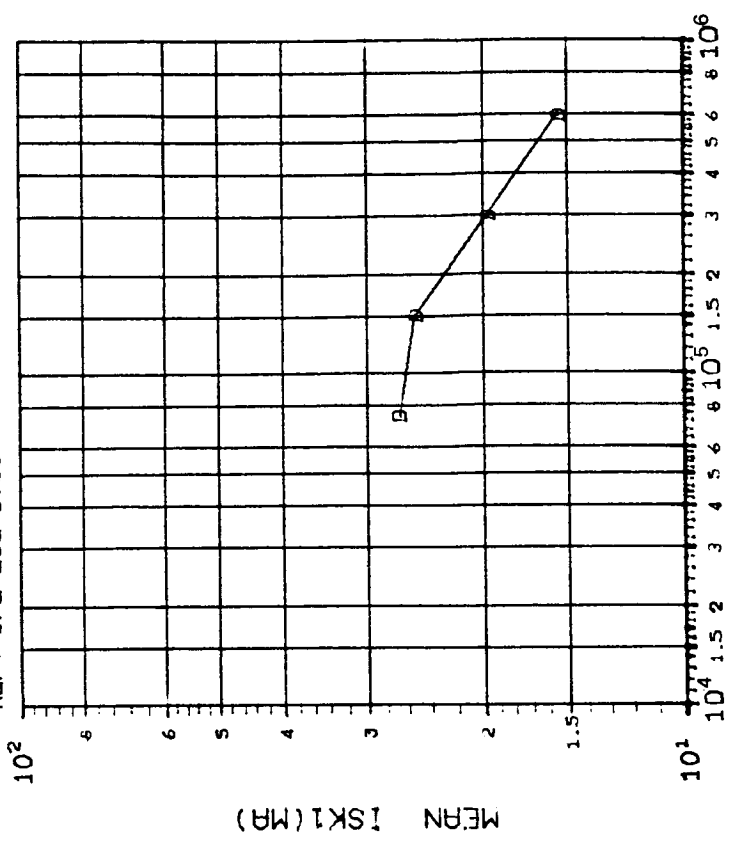
DOSE, rads(Si) 2.5 MeV electrons

(3)1B (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
	600
	1000
	11.60 15.36 18.23 26.91 31.60

INITIAL MEAN VALUE IB(NA) = $4.77 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0988 DATE CODE NONE



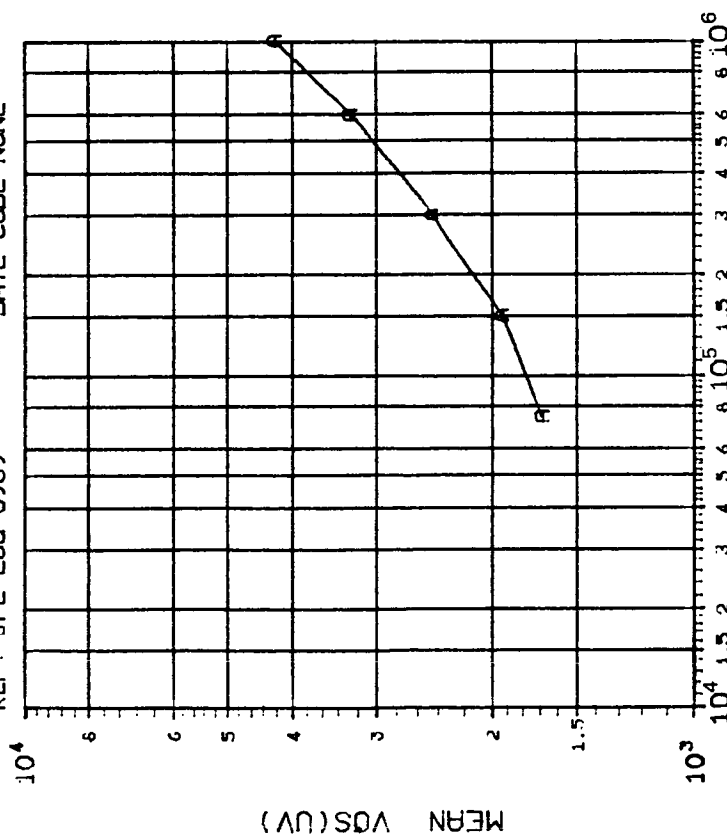
DOSE, rads(Si) 2.5 MeV electrons

(4)1SK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	600
	1000
	2.222 2.751 5.564 8.971 ***

INITIAL MEAN VALUE ISK1(MA) = $2.97 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0989 DATE CODE NONE



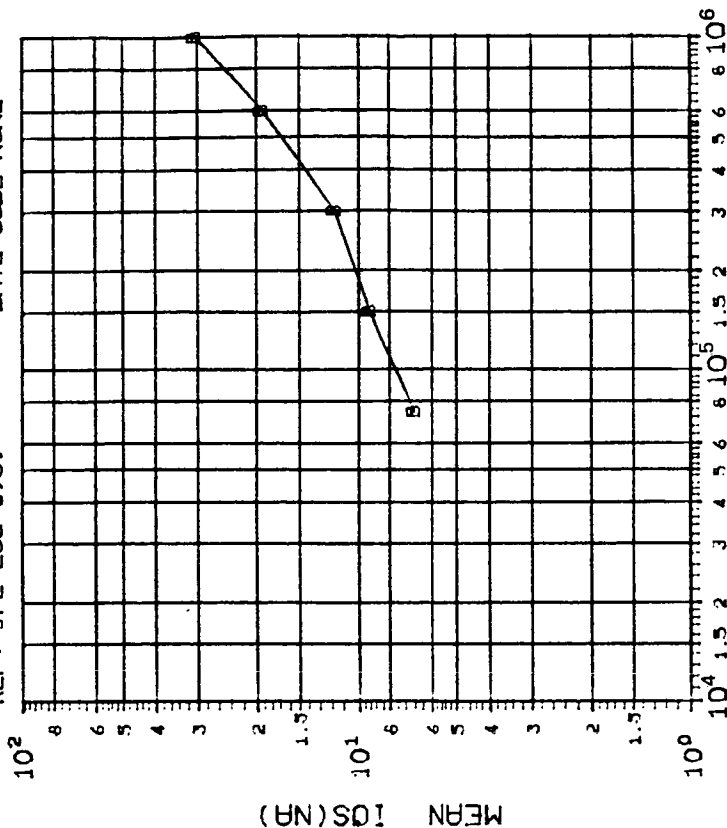
DOSE, rads(Si) 2.5 MeV electrons

(1) VDS (V0=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	150
	300	600
	1000	1000
	415.2	435.0
	456.7	608.8
	942.6	

INITIAL MEAN VALUE VDS(UV) = 9.25X10⁺²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0989 DATE CODE NONE



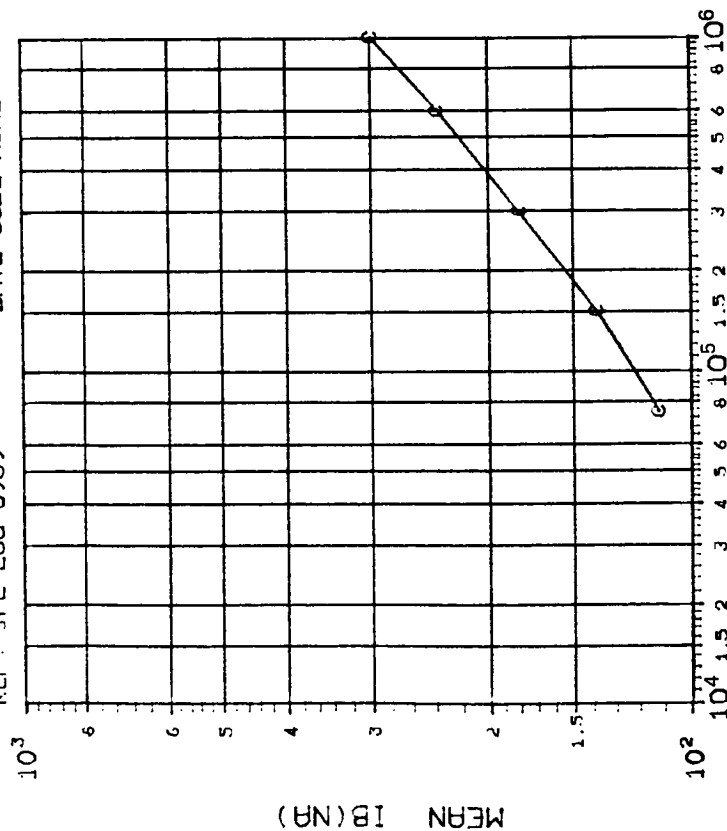
DOSE, rads(Si) 2.5 MeV electrons

(2) IOS (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	150
	300	600
	1000	1000
	1.528	1.136
	1.061	2.658
	5.744	

INITIAL MEAN VALUE IOS(NA) = 5.93X10⁺⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 6 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0989 DATE CODE NONE



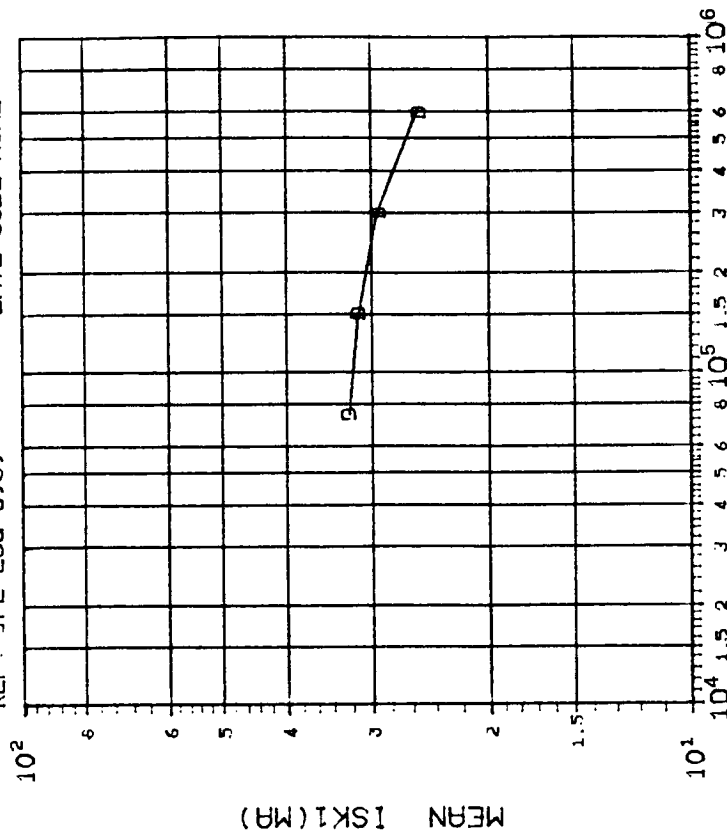
DOSE, rads(Si) 2.5 MeV electrons

(3)IB (V0=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600 1000
C	8.417	10.14 11.41 14.54 20.25

INITIAL MEAN VALUE IB(NA) = $4.11 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 6 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0989 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(4)ISK1 (V0=0.6V) IN MA: VS DOSE

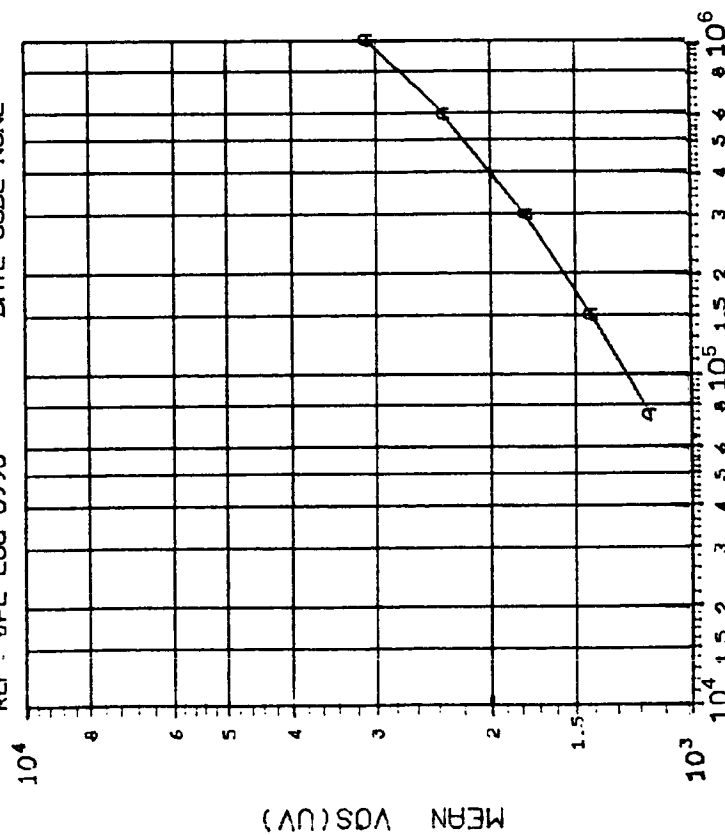
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600 1000
D	1.205	1.227 1.329 2.014 ****

INITIAL MEAN VALUE ISK1(MA) = $3.36 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-05-83

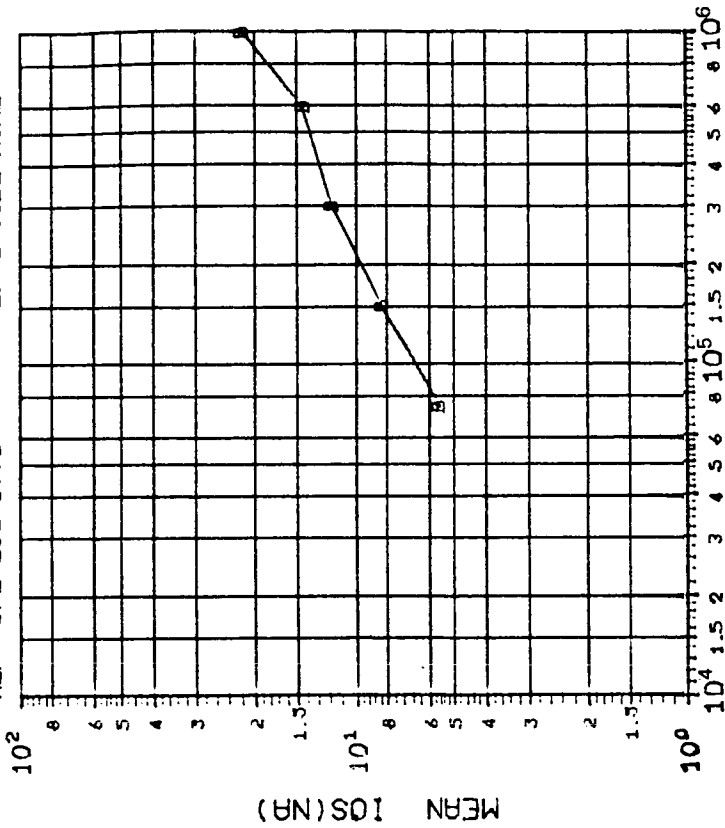
REF: JPL LOG 0990 DATE CODE NONE



DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0990 DATE CODE NONE



DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0990 DATE CODE NONE

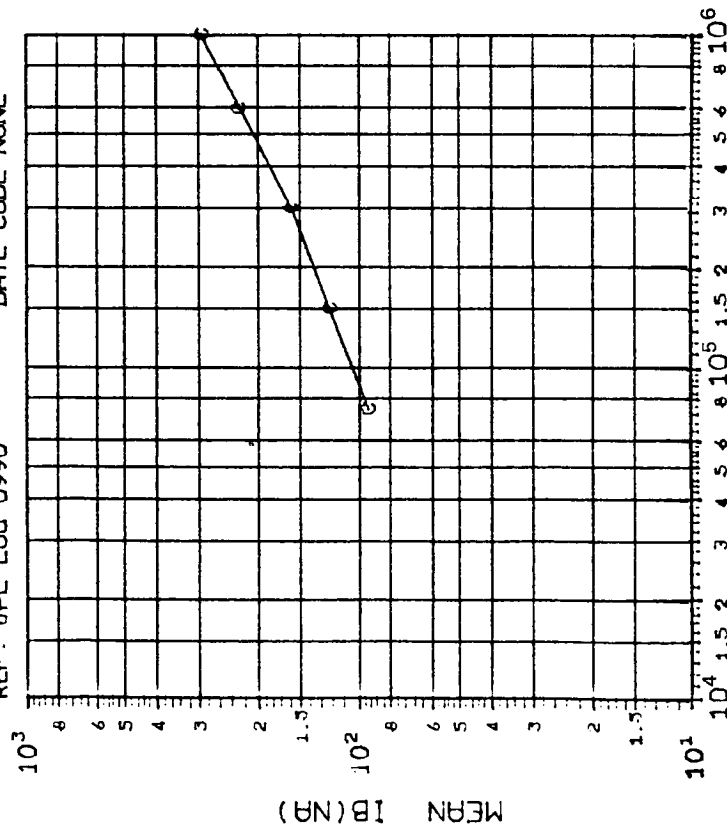


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600 1000
C	7.081	9.930 21.69 21.63 30.35

INITIAL MEAN VALUE IB(NA) = $4.36 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0990 DATE CODE NONE

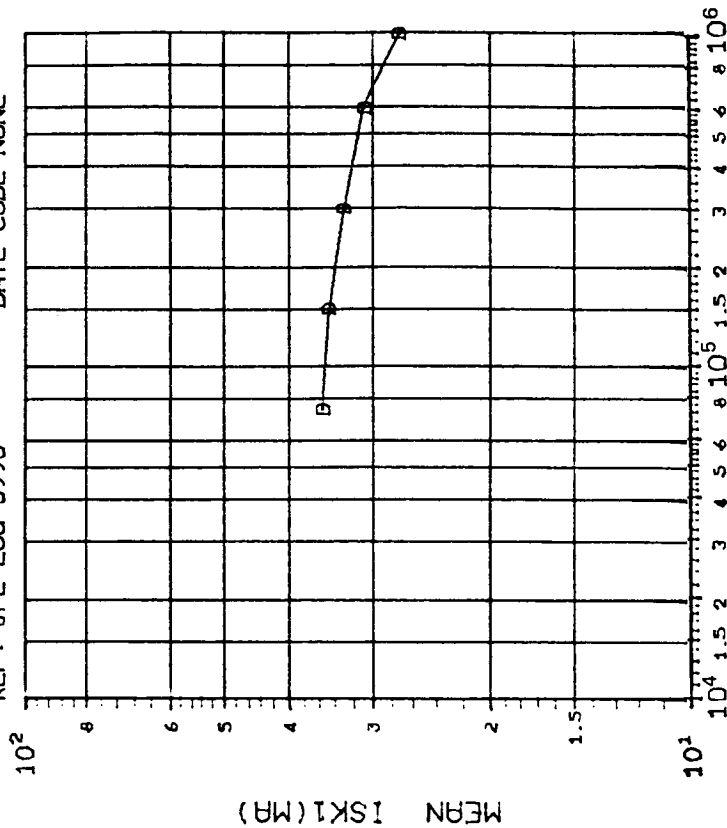
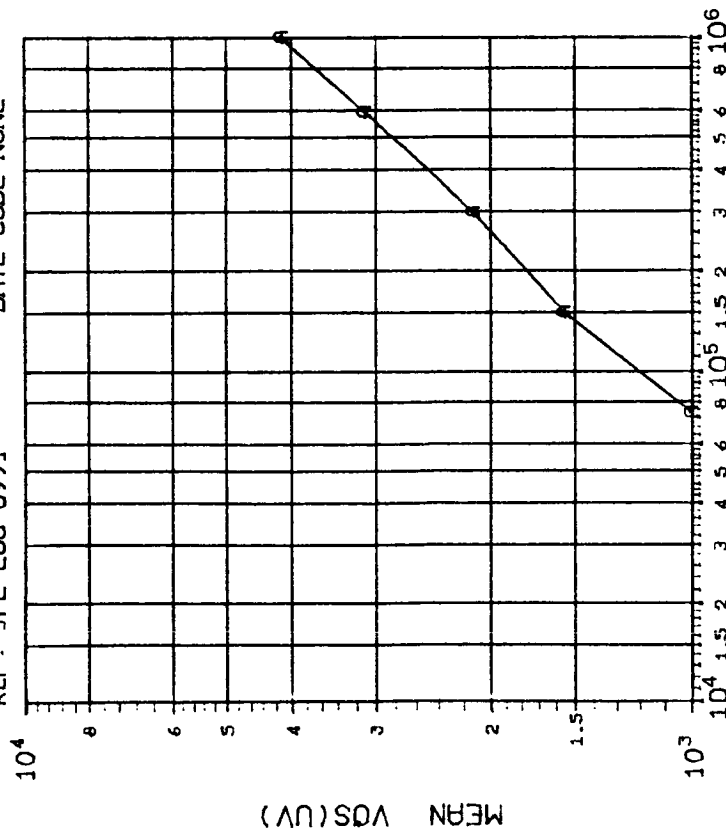


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600 1000
D	.6007	.7222 .9354 1.512 2.516

INITIAL MEAN VALUE ISK1(MA) = $3.72 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0991 DATE CODE NONE



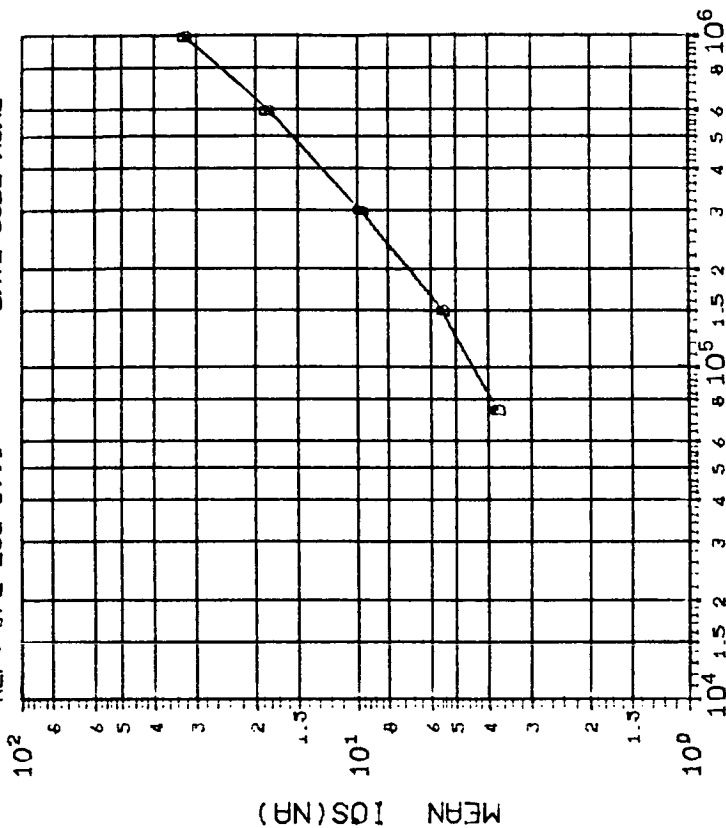
DOSE, kilorads(Si) 2.5 MeV electrons

(1)VDS (VDS=0.5V) IN VOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
	600
A	1000
	1420
	1223
	1420

INITIAL MEAN VALUE VDS(UV) = 5.22X10¹²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0991 DATE CODE NONE



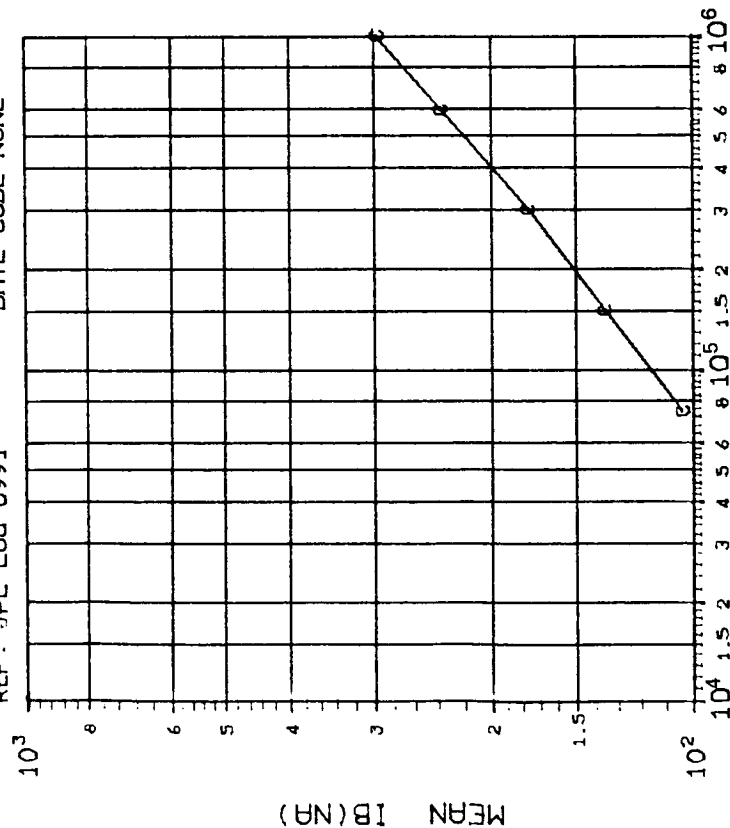
DOSE, kilorads(Si) 2.5 MeV electrons

(2)IOS (VDS=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
	600
B	1000
	1420
	1223
	1420

INITIAL MEAN VALUE IOS(NA) = 2.19X10¹³

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0991 DATE CODE NONE



MEAN IB (NA)

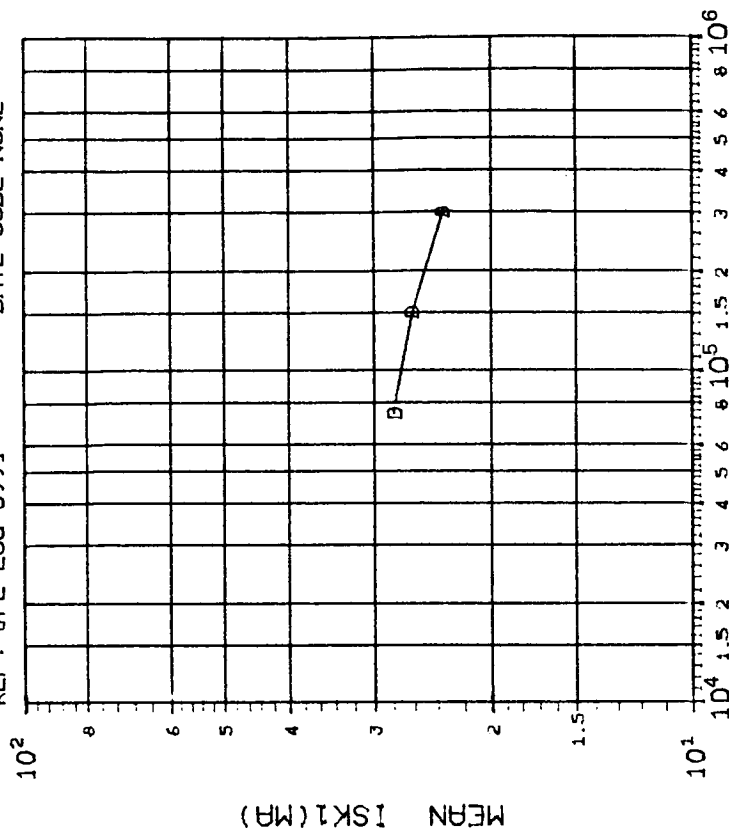
DOSE, rad(Si) 2.5 MeV electrons

(3)IB (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
C	75	150	300
	75	150	300
	2.235	2.430	2.997
	****	****	****

INITIAL MEAN VALUE IB(NA) = 4.79×10^{11}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0991 DATE CODE NONE



MEAN ISK1 (MA)

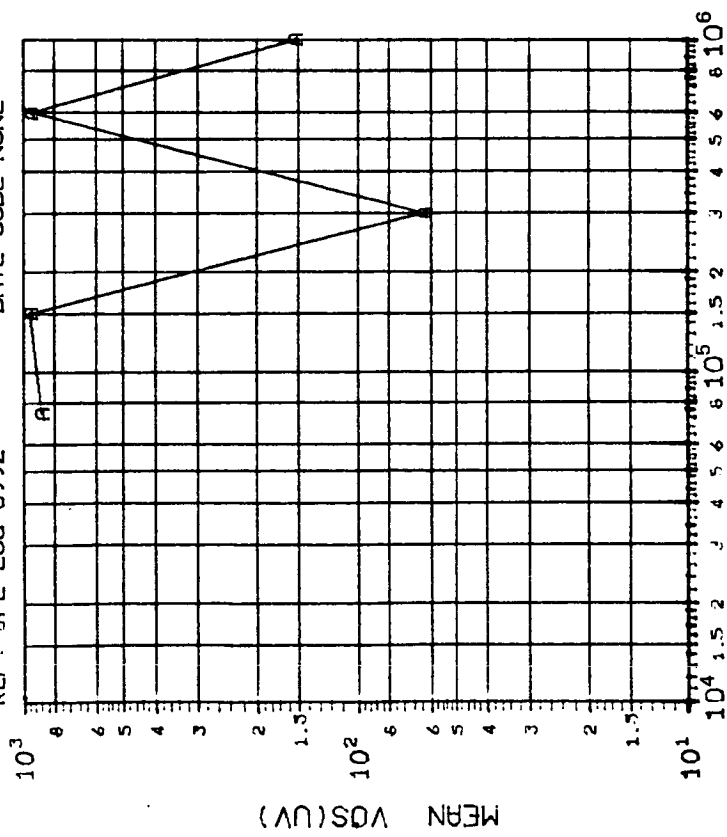
DOSE, rad(Si) 2.5 MeV electrons

(4)ISK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
D	75	150	300
	75	150	300
	2.235	2.430	2.997
	****	****	****

INITIAL MEAN VALUE ISK1(MA) = 3.01×10^{11}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0992 DATE CODE NONE

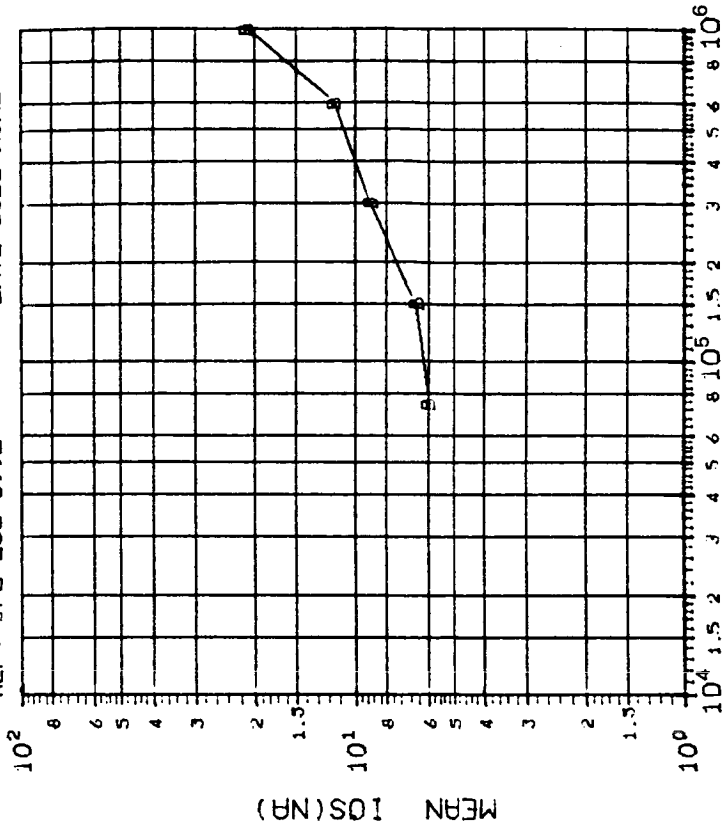


(1) VOS (VO=0.5V) IN UVOLTS: VS DOSE
 DOSE, rads(Si) 2.5 MeV electrons

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
	600
	1000
	734.9
	695.6
	3232. 1260. 6477.

INITIAL MEAN VALUE VOS(UV) = 6.04X10⁺²

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0992 DATE CODE NONE

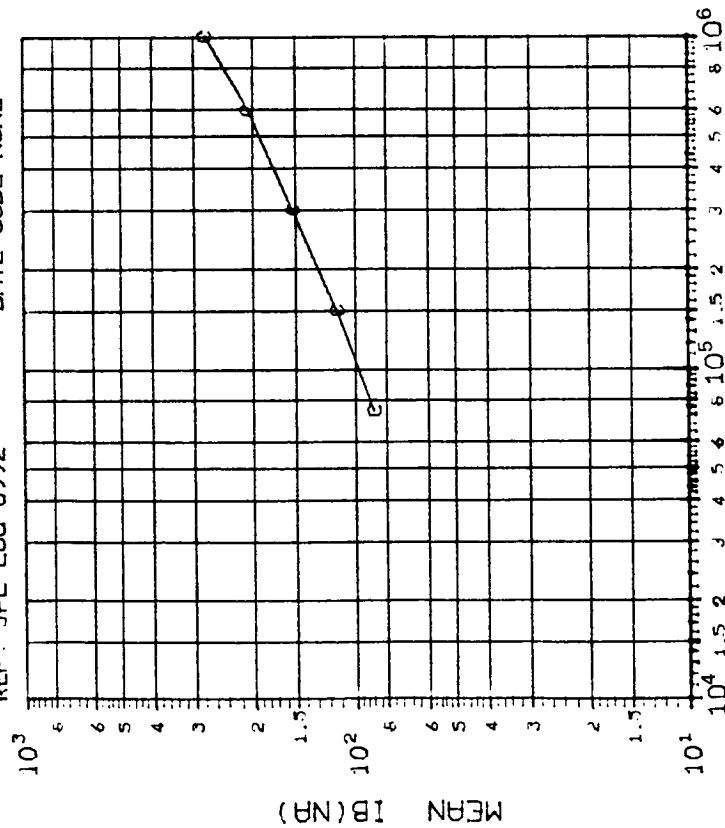


(2) IOS (VO=0.5V) IN NA: VS DOSE
 DOSE, rads(Si) 2.5 MeV electrons

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
	600
	1000
	1.428
	2.411
	3.724
	7.524
	5.951

INITIAL MEAN VALUE IOS(NA) = 5.36X10⁺⁰

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0992 DATE CODE NONE



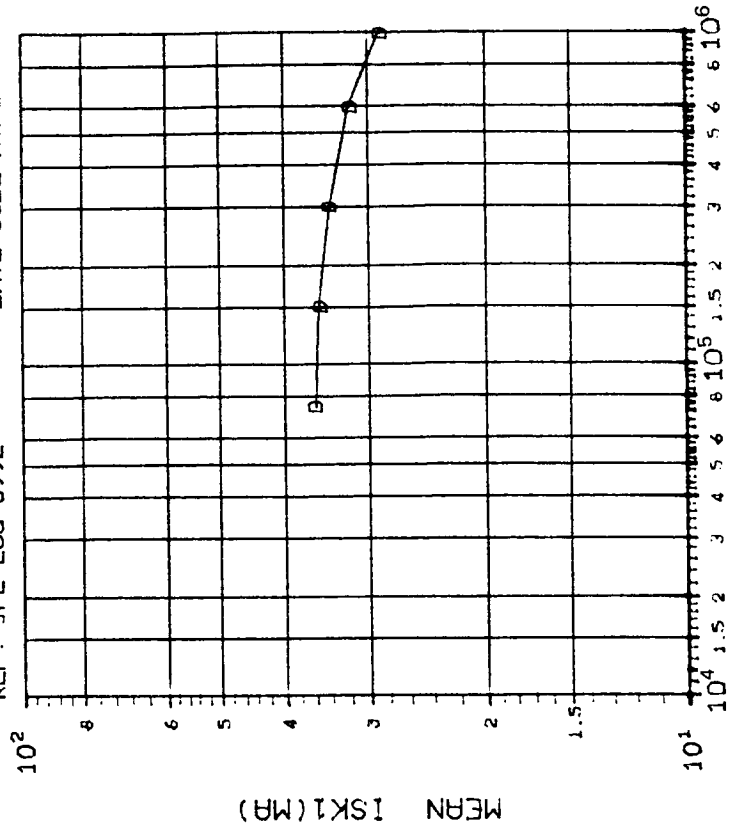
DOSE, rads(Si) 2.5 MeV electrons

(3)1B (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	150
	300	600
	1000	
	6.015	6.611
	9.948	15.14
	18.18	

INITIAL MEAN VALUE 1B(NA) = $4.29 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0992 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(4)1SK1 (VO=0.6V) IN MA: VS DOSE

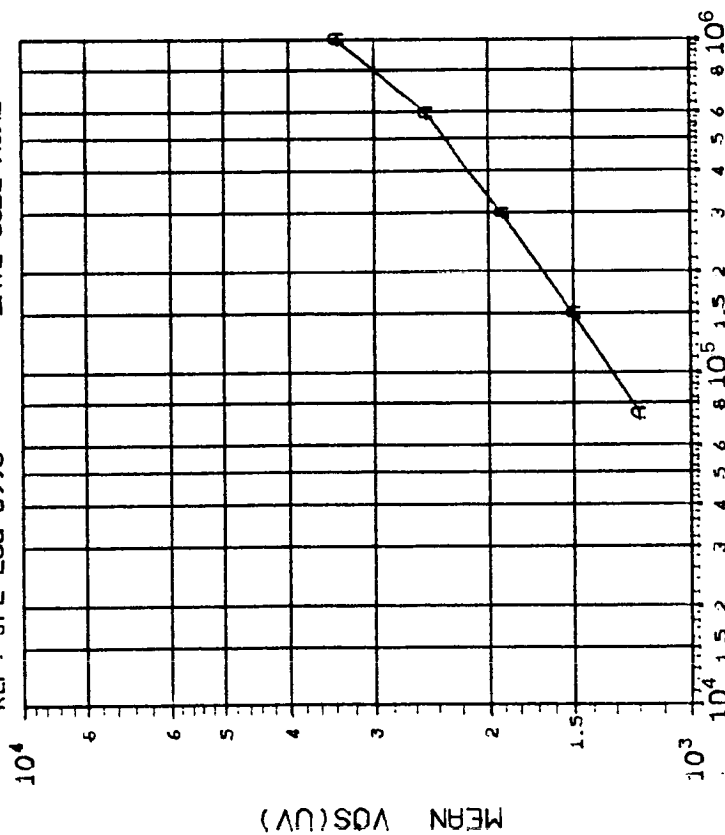
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75	150
	300	600
	1000	
	1.306	1.581
	2.799	3.127
	5.255	

INITIAL MEAN VALUE 1SK1(MA) = $3.78 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 03-16-83

REF: JPL LOG 0993 DATE CODE NONE



(1) VOS (VO=0.5V) IN UVOLTS: VS DOSE

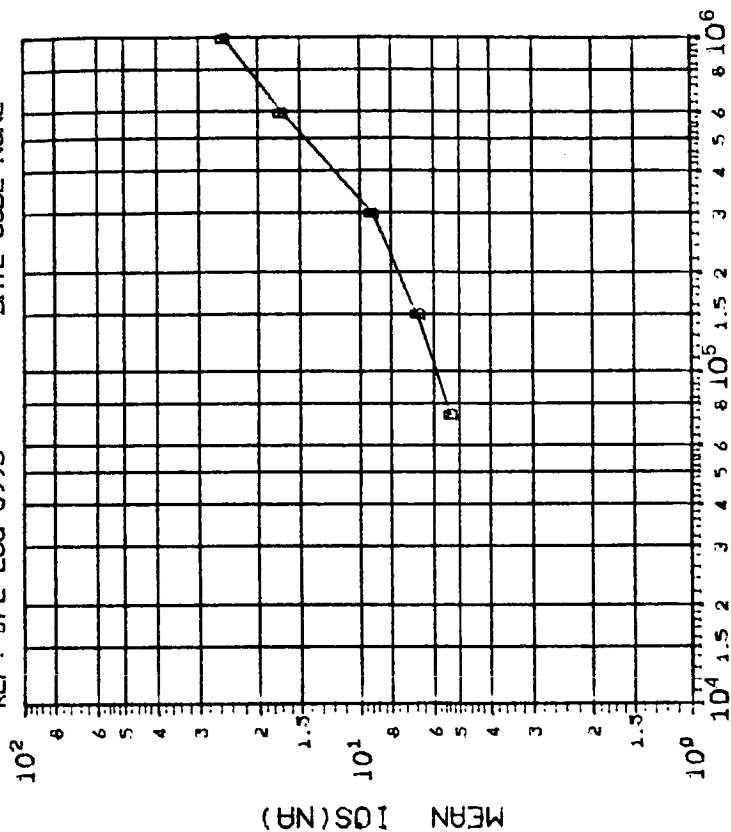
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
	600
	1000
	442.4
	461.0
	528.6
	636.7
	905.8

INITIAL MEAN VALUE VOS(UV) = 8.14×10^{12}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 03-16-83

REF: JPL LOG 0993 DATE CODE NONE



(2) IOS (VO=0.5V) IN NR: VS DOSE

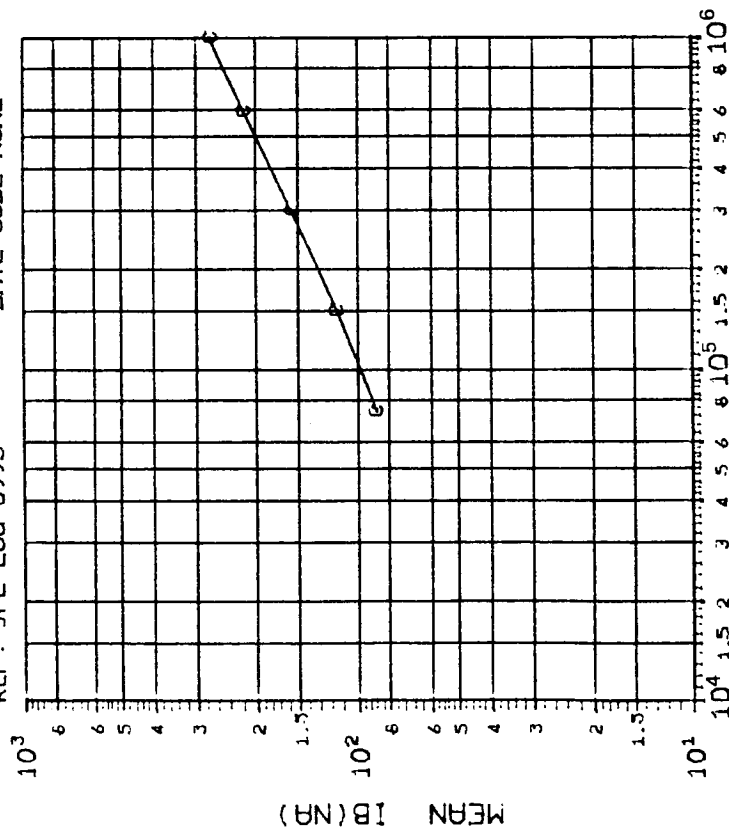
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
	600
	1000
	1.135
	2.143
	3.175
	4.393
	8.291

INITIAL MEAN VALUE IOS(NR) = 5.66×10^{10}

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 03-16-83

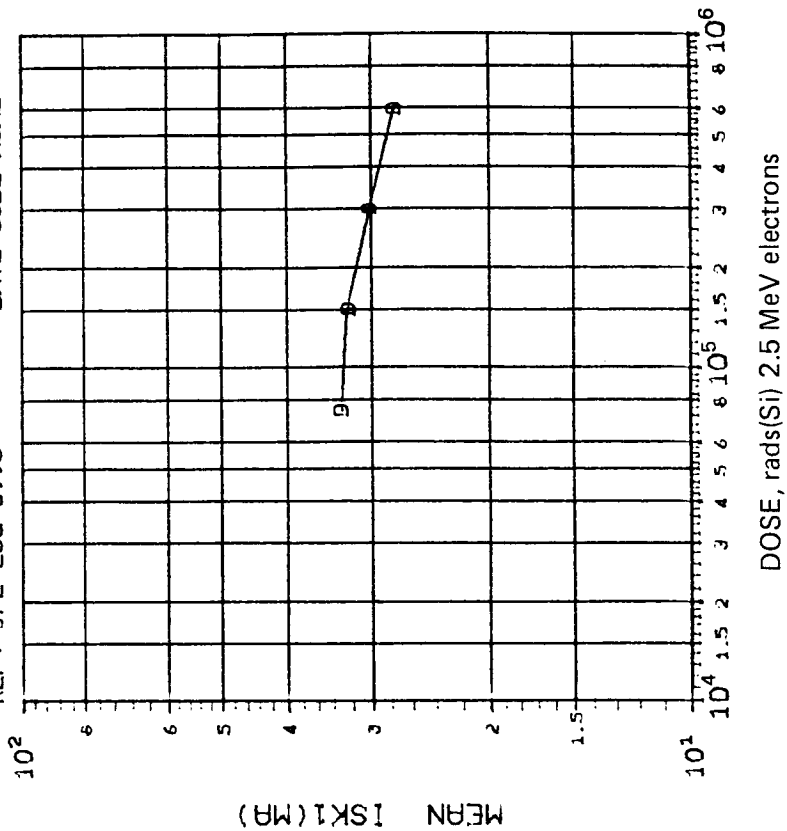
REF: JPL LOG 0993 DATE CODE NONE



DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 03-16-83

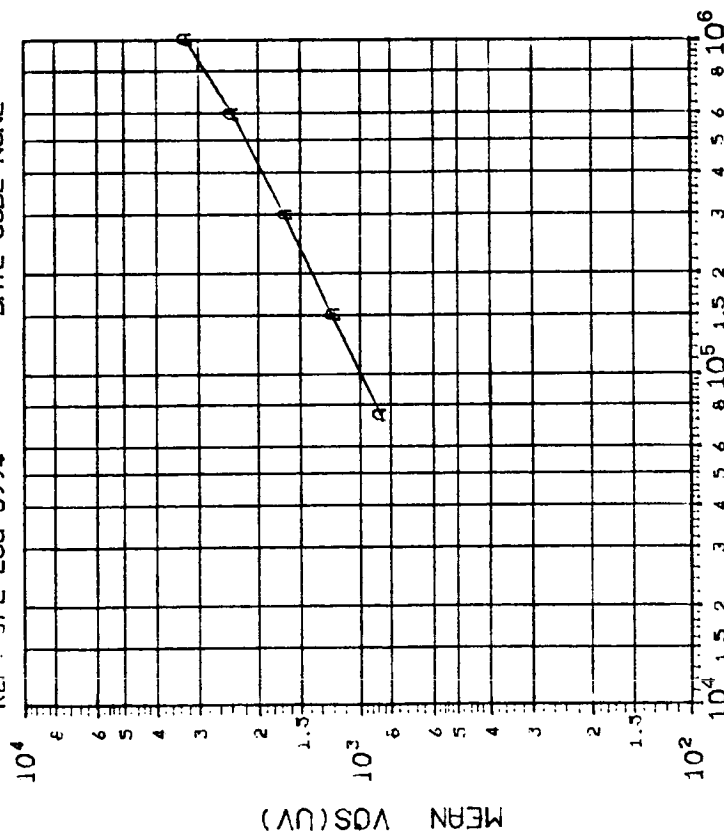
REF: JPL LOG 0993 DATE CODE NONE



DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0994 DATE CODE NONE

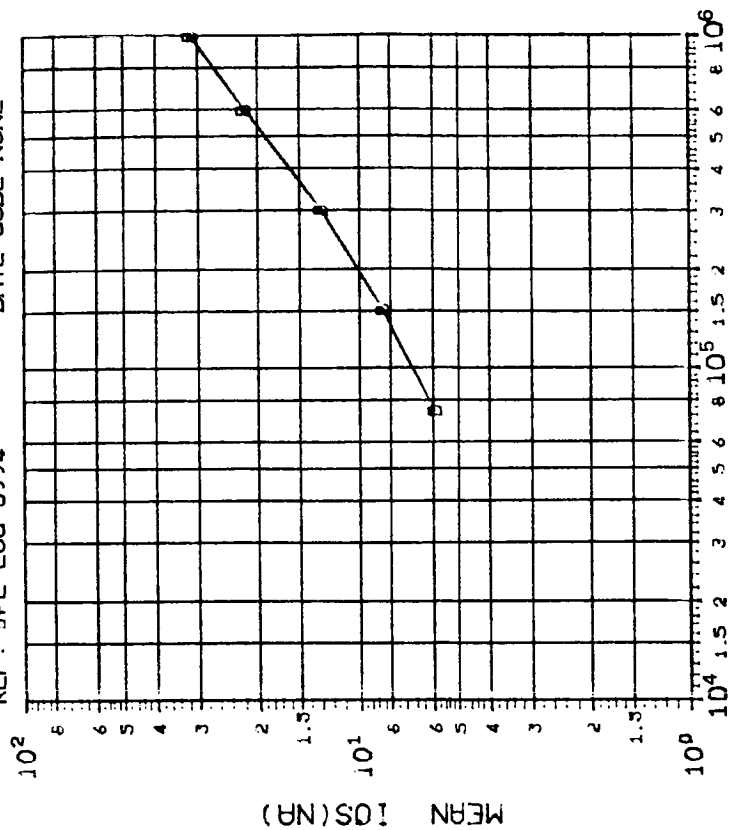


DOSE, rads(Si) 2.5 MeV electrons

(1) VOS (V_{OS}=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
	600
	1000
824.2 805.7 726.5 620.6 1321.	

INITIAL MEAN VALUE VOS(UV) = $4.61 \times 10^{+2}$



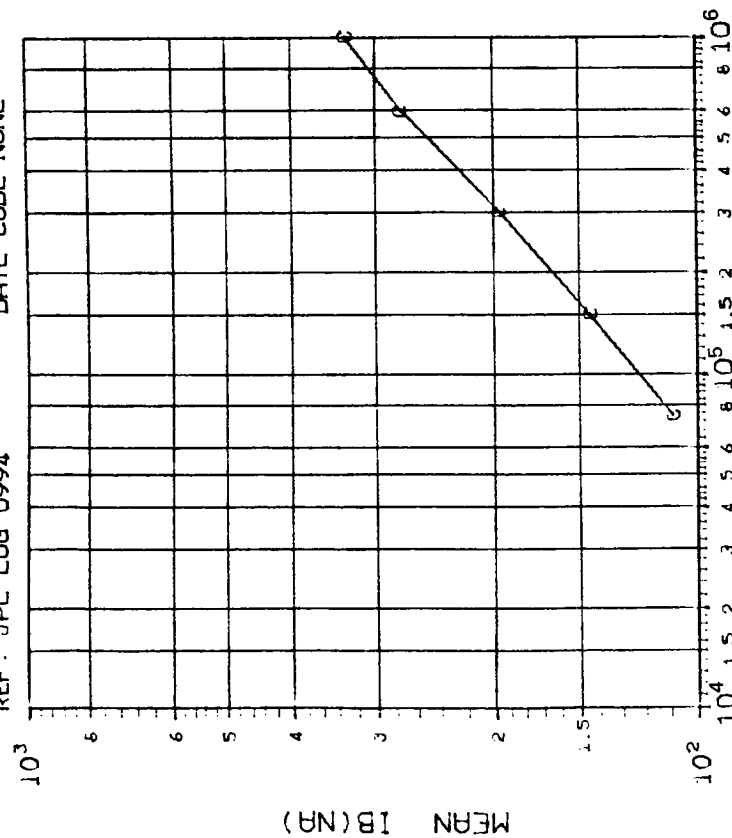
DOSE, rads(Si) 2.5 MeV electrons

(2) IOS (V_{OS}=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
	600
	1000
1.292 2.582 3.703 3.359 8.917	

INITIAL MEAN VALUE IOS(NA) = $5.65 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 6 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0994 DATE CODE NONE



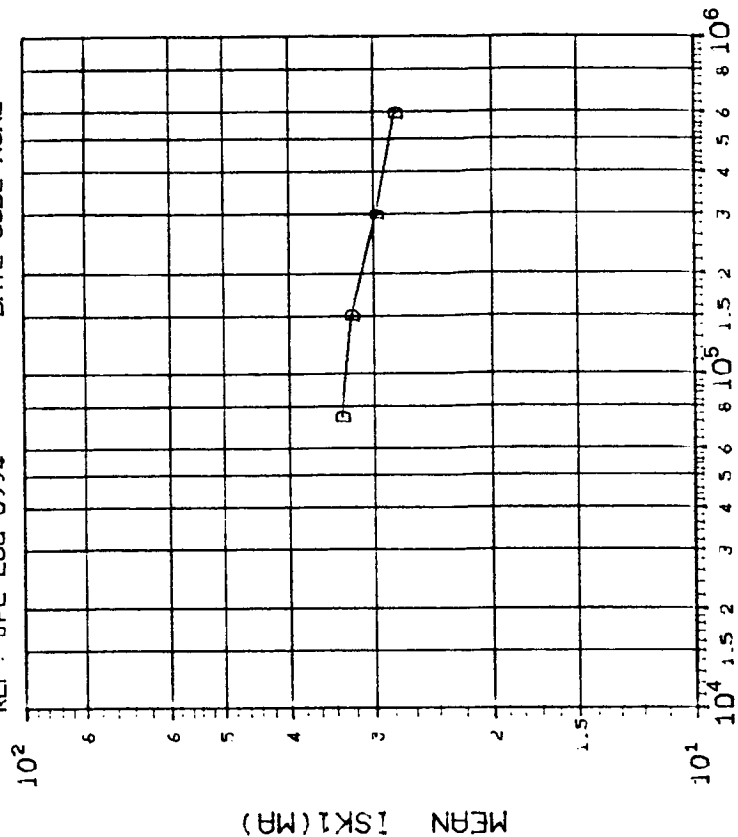
DOSE, rads(Si) 2.5 MeV electrons

(3)1B (VO=0.5V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
	300	600
	1000	
C	5.325	8.624
	11.72	20.95
	36.37	

INITIAL MEAN VALUE IB(NA) = 5.24×10^2

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
MFG: AMD 6 DEVICES TEST DATE 04-05-83
REF: JPL LOG 0994 DATE CODE NONE



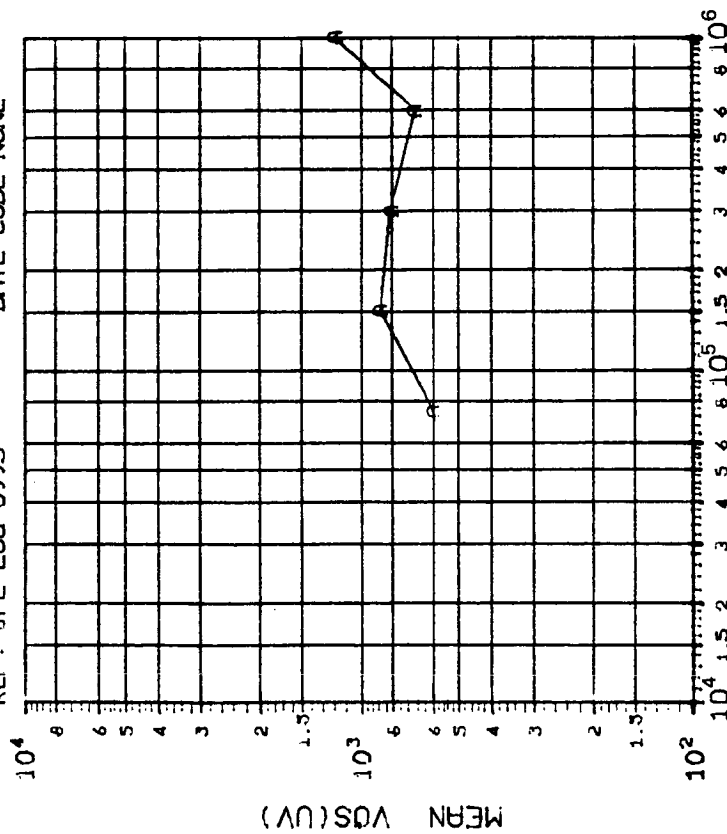
DOSE, rads(Si) 2.5 MeV electrons

(4)1SK1 (VO=0.6V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
	300	600
	1000	
D	1.056	.8355
	.6938	2.856

INITIAL MEAN VALUE ISK1(MA) = 3.57×10^1

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0995 DATE CODE NONE



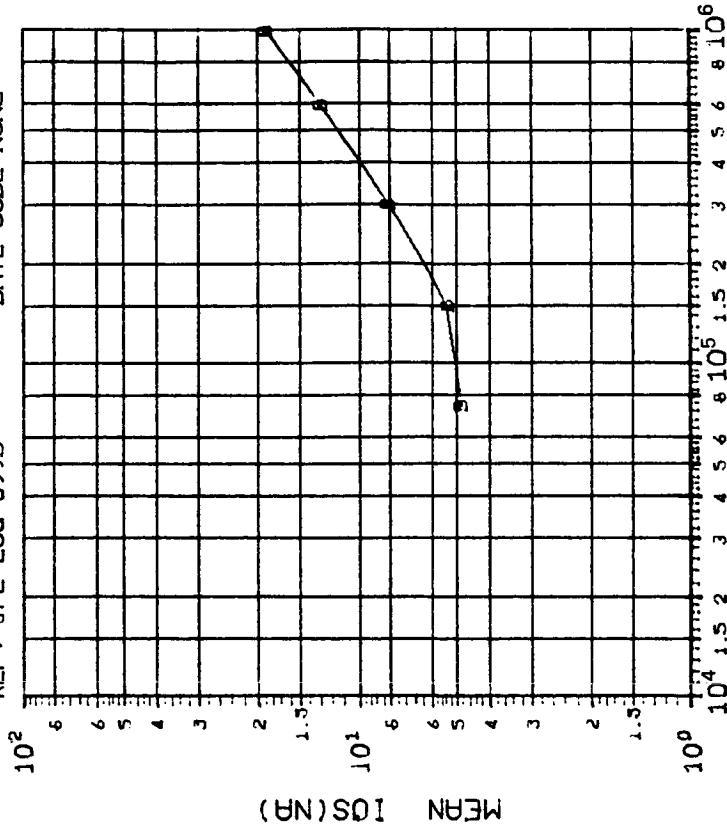
DOSE, rads(Si) 2.5 MeV electrons

(1)VOS (VO=0.5V) IN UVOLTS: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
	600
	1000
	667.5 704.6 1478. 3274. 4320.

INITIAL MEAN VALUE VOS(UV) = $2.60 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-05-83
 REF: JPL LOG 0995 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(2)IOS (VO=0.5V) IN NA: VS DOSE

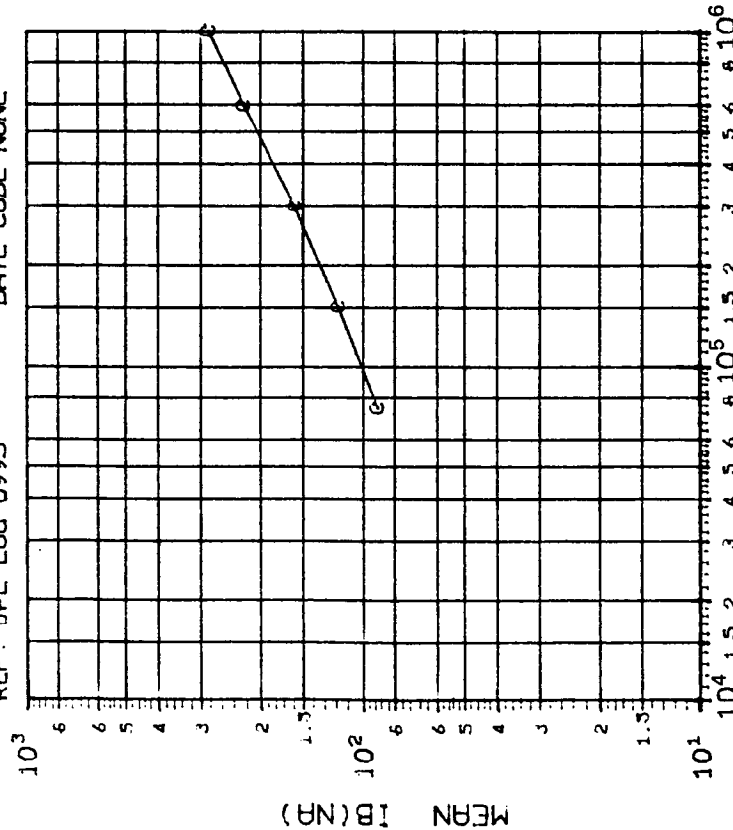
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
	600
	1000
	1.941 .7787 1.122 6.289 10.96

INITIAL MEAN VALUE IOS(NA) = $4.51 \times 10^{+2}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0995 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(3)IB (VO=0.5V) IN NA: VS DOSE

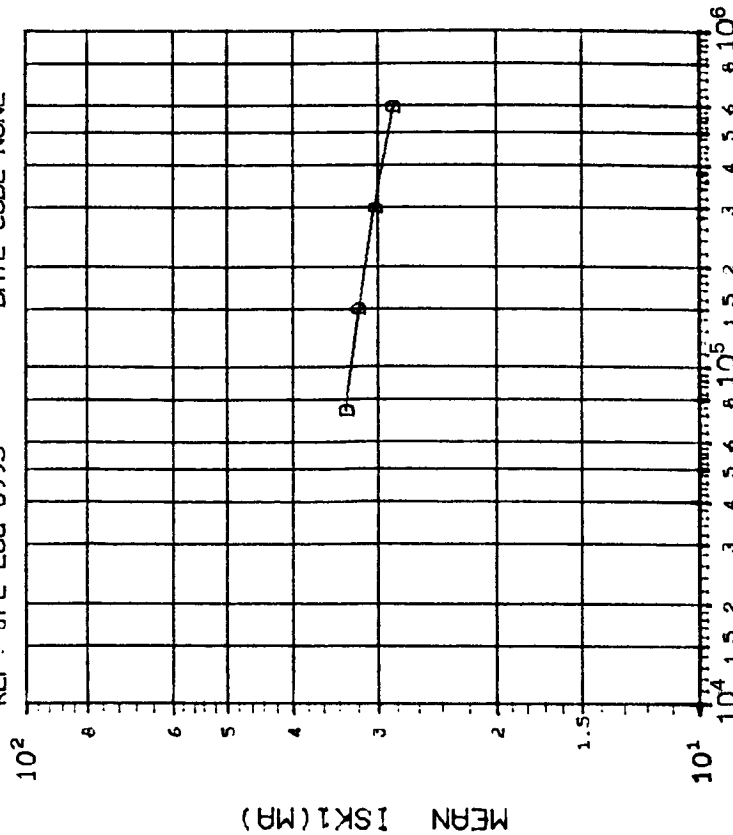
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	150
	300	600
	1000	
	11.77	15.28
	18.67	30.91
	50.22	

INITIAL MEAN VALUE IB(NA) = $4.22 \times 10^{+1}$

DEVICE TYPE: LM111 VOLTAGE COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-05-83

REF: JPL LOG 0995 DATE CODE NONE



DOSE, rads(Si) 2.5 MeV electrons

(4)ISK1 (VO=0.6V) IN MA: VS DOSE

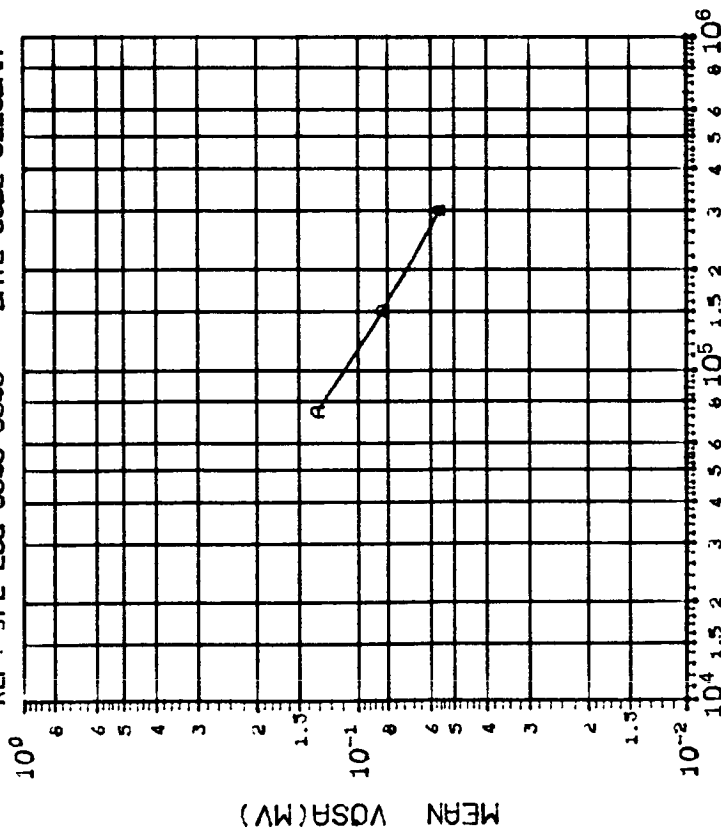
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75	150
	300	600
	1000	
	1.955	2.474
	3.231	5.490

INITIAL MEAN VALUE ISK1(MA) = $3.56 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 82280MM



DOSE, rads(Si) Co⁶⁰ Gammas

(1)VOSA (VO=0) IN MV: VS DOSE

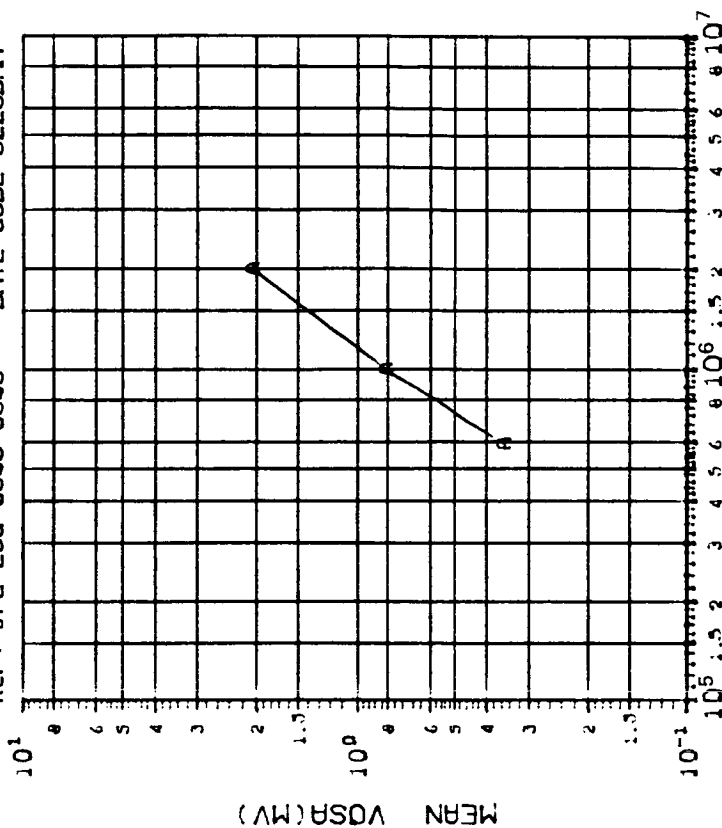
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.6625 .6091 .6163

INITIAL MEAN VALUE VOSA(MV) = 5.20×10^{-2}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 82280MM



DOSE, rads(Si) Co⁶⁰ Gammas

(1)VOSA (VO=0) IN MV: VS DOSE

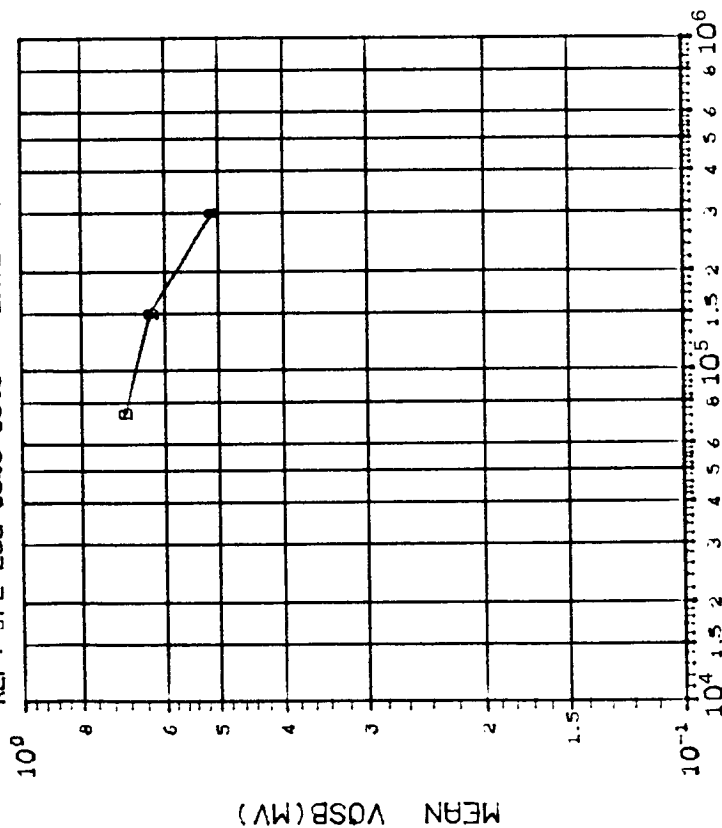
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.6567 .7001 .6144

INITIAL MEAN VALUE VOSA(MV) = 5.20×10^{-2}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 82280H11



DOSE, rads(Si) Co⁶⁰ Gammas

(2)VOSB (V0=0) IN MV: VS DOSE

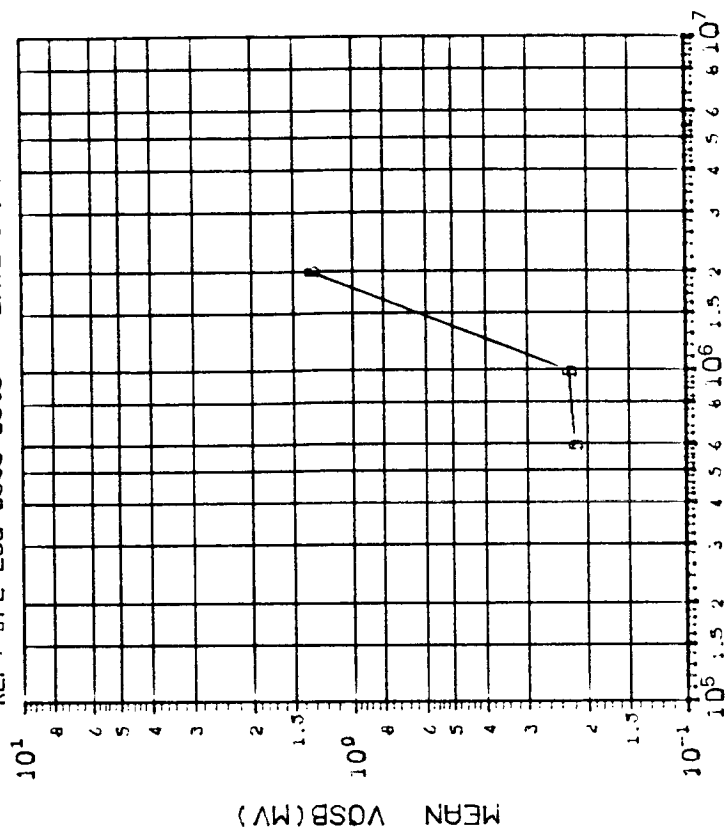
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
.9432 .9507 .9614	

INITIAL MEAN VALUE VOSB(MV) = 6.19×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 82280H11



DOSE, rads(Si) Co⁶⁰ Gammas

(2)VOSB (V0=0) IN MV: VS DOSE

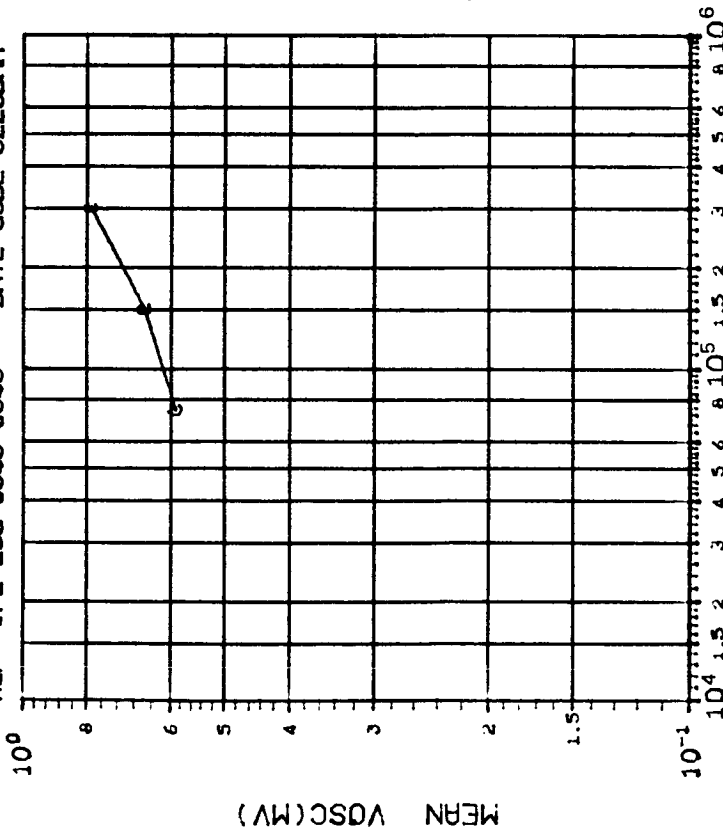
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600
	1000
	2000
.9661 .9965 1.152	

INITIAL MEAN VALUE VOSB(MV) = 6.19×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 82280M1



MEAN VOSC(MV)

DOSE, rads(Si) Co 60 Gammas

(31)VOSC (V0=0) IN MV: VS DOSE

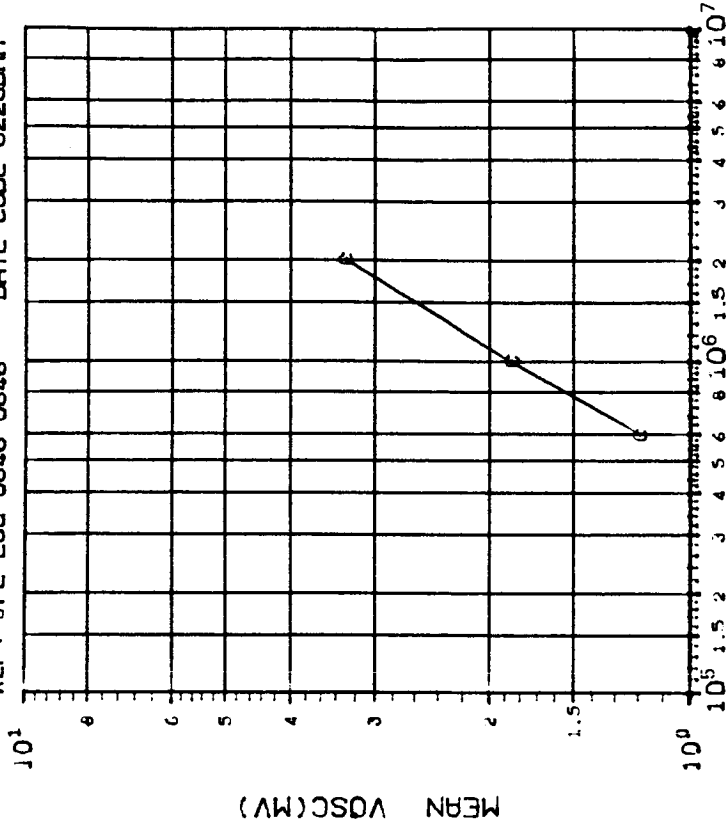
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
C	.6310	.6402
		.6413

INITIAL MEAN VALUE VOSC(MV) = 4.63×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 82280M1



MEAN VOSC(MV)

DOSE, rads(Si) Co 60 Gammas

(31)VOSC (V0=0) IN MV: VS DOSE

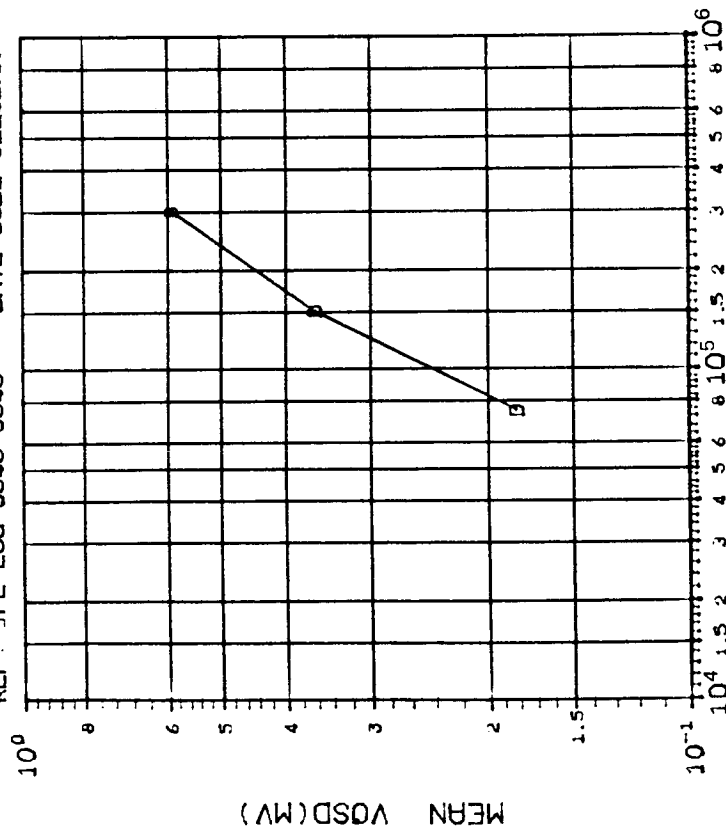
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000
C	.7998	.1420
		.6794

INITIAL MEAN VALUE VOSC(MV) = 4.63×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 82280MM



DOSE, rads(Si) Co⁶⁰ Gammas

(4) VOSD (V0=0) IN MV: VS DOSE

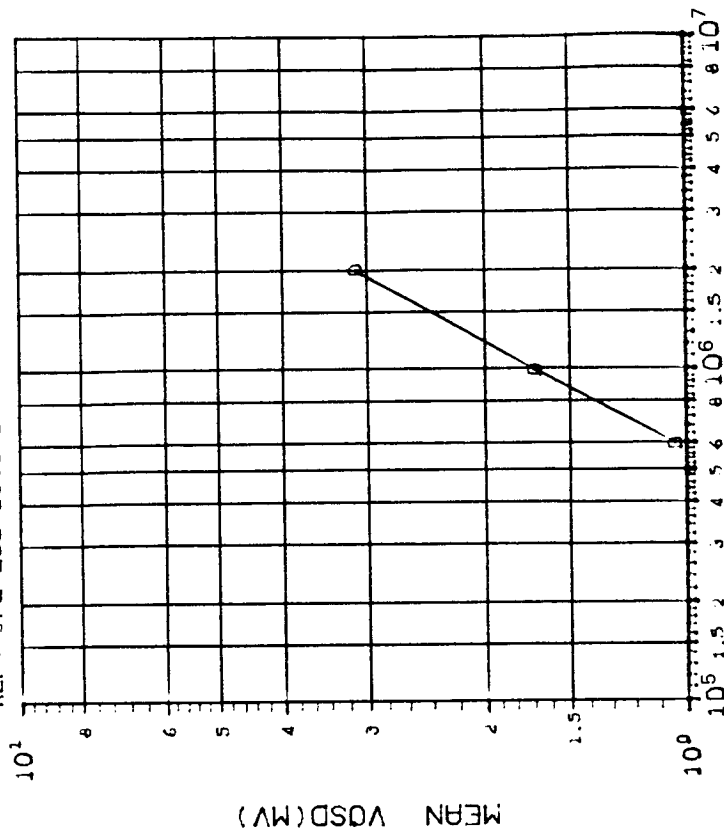
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
D	.5010 .4740 .4569

INITIAL MEAN VALUE VOSD(MV) = 8.89×10^{-4}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 82280MM



DOSE, rads(Si) Co⁶⁰ Gammas

(4) VOSD (V0=0) IN MV: VS DOSE

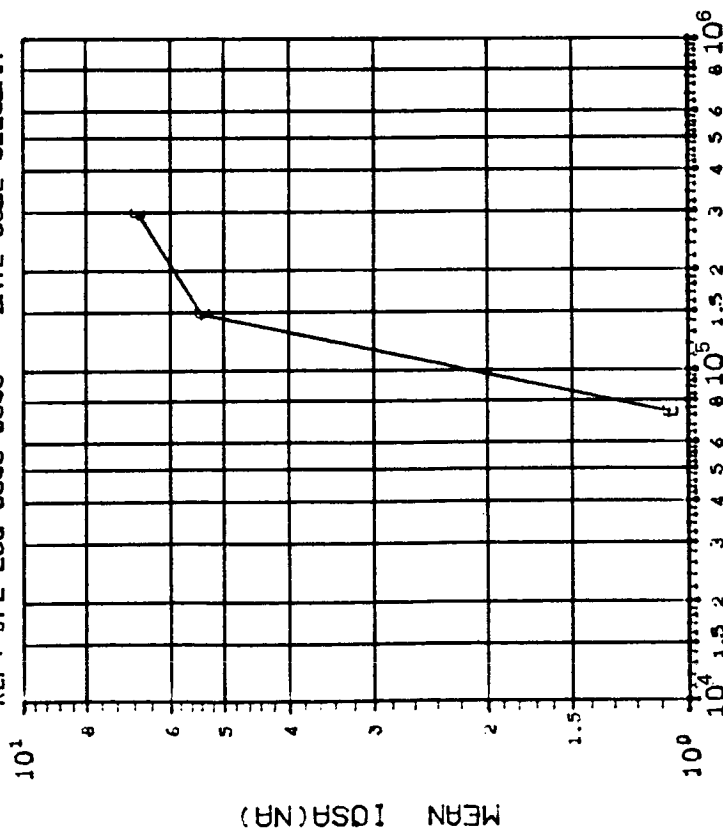
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600
	1000
	2000
D	.4311 .4114 .3447

INITIAL MEAN VALUE VOSD(MV) = 8.89×10^{-4}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co 60 Gammas

(5110SA (V0=01 IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

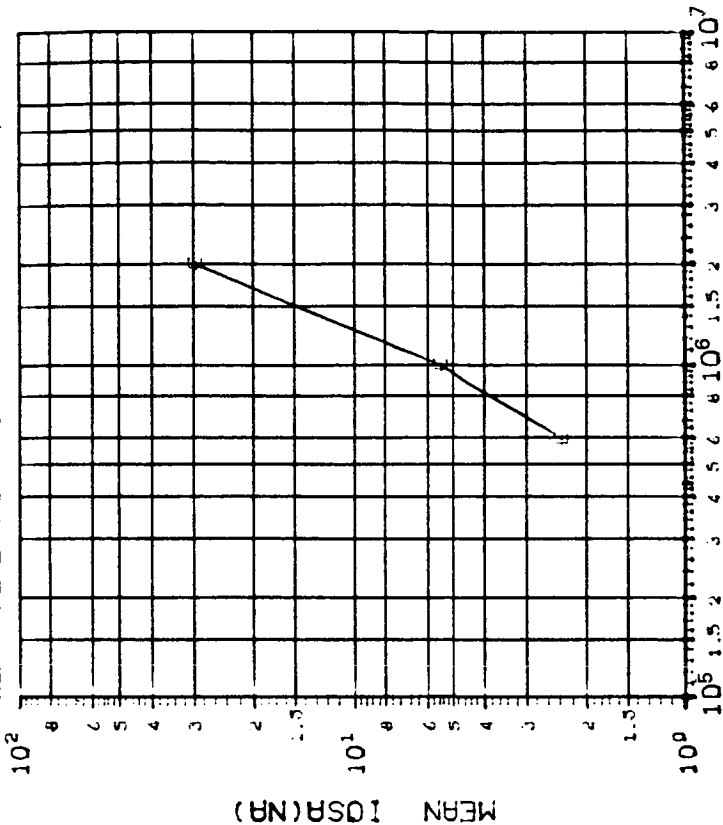
CURVE	DOSE, kilorads(Si)
E	75 150 300
	6.365 5.28 6.82

INITIAL MEAN VALUE IOSA(NA) = 3.59×10^{-0}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co 60 Gammas

(5110SA (V0=01 IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

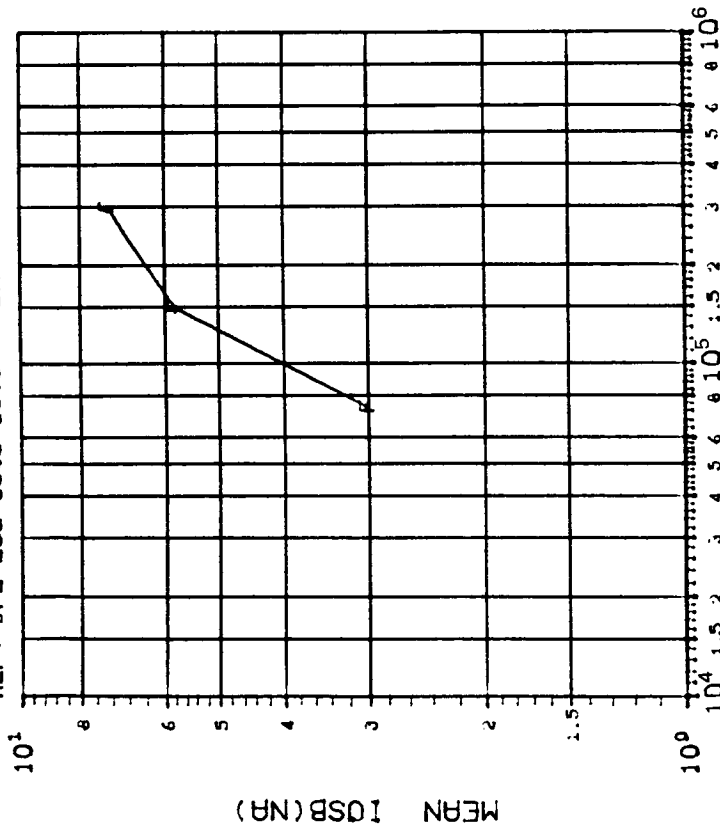
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	16.19 13.39 12.70

INITIAL MEAN VALUE IOSA(NA) = 3.59×10^{-0}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rads(Si) Co ⁶⁰ Gammas

(6110SB (V0=0) IN NA: VS DOSE

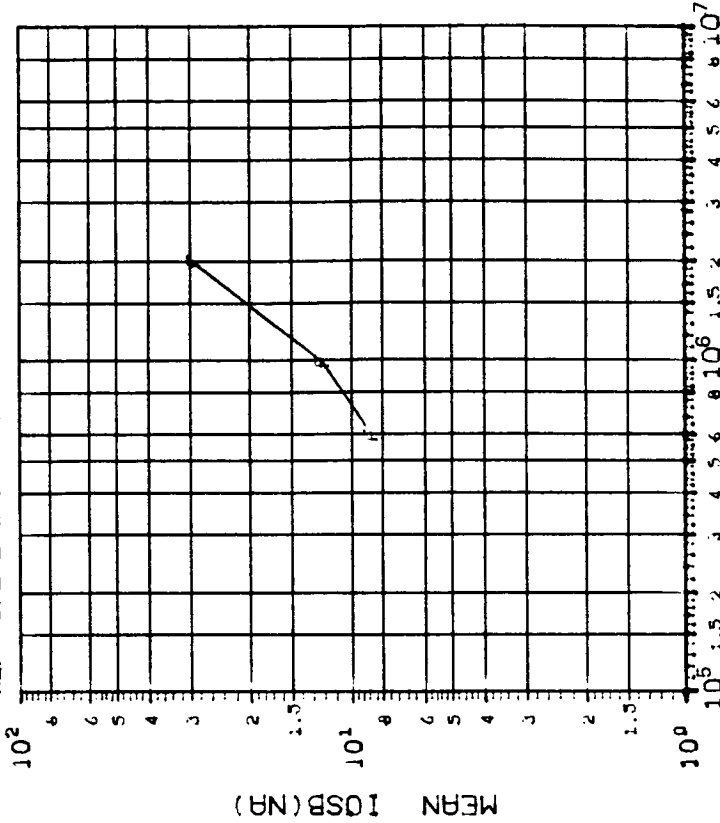
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	0.400 15.56 19.01

INITIAL MEAN VALUE 10SB(NA) = 2.93X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rads(Si) Co ⁶⁰ Gammas

(6110SB (V0=0) IN NA: VS DOSE

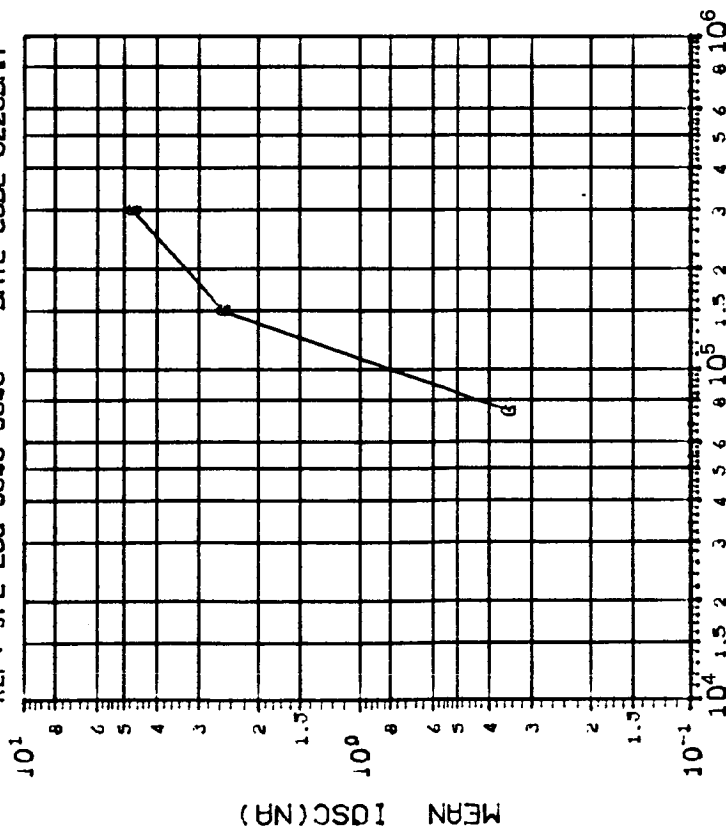
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	15.38 10.68 10.63

INITIAL MEAN VALUE 10SB(NA) = 2.93X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co 60 Gammas

(7110SC (V0=01 IN NA: VS DOSE

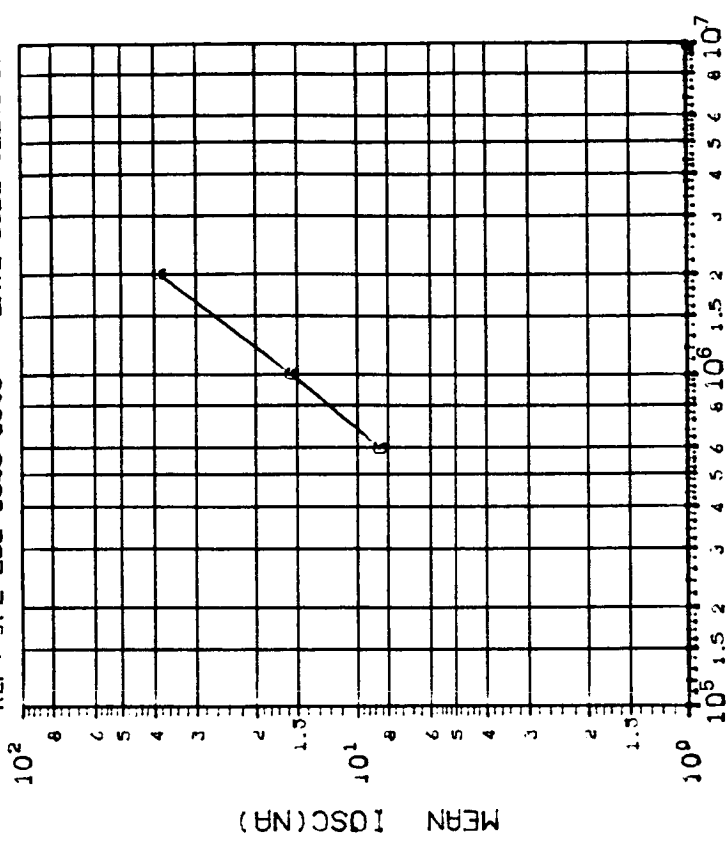
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75
	150
	300
G	3.192 6.677 7.867

INITIAL MEAN VALUE IOSC(NA) = 2.25X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co 60 Gammas

(7110SC (V0=01 IN NA: VS DOSE

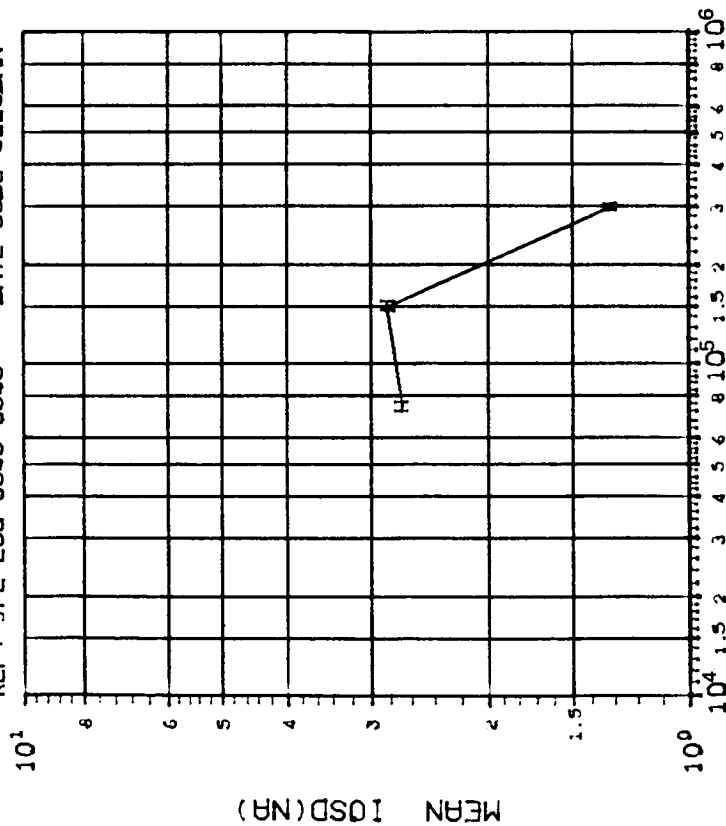
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600
	1000
	2000
G	6.597 5.167 6.320

INITIAL MEAN VALUE IOSC(NA) = 2.25X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co⁶⁰ Gammas

(8)10SD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

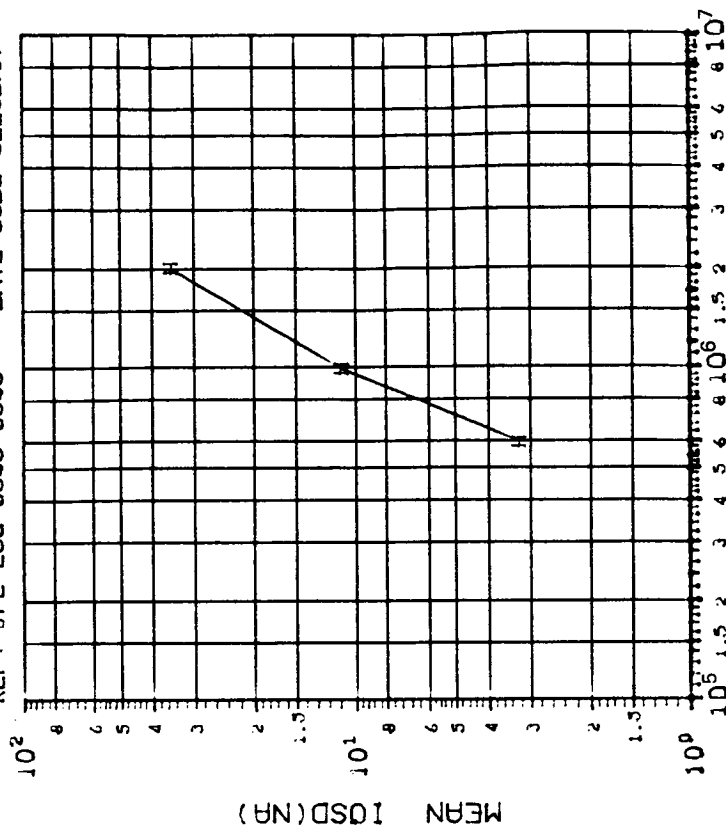
CURVE	DOSE, kilorads(Si)
	75 150 300
H	3.720 6.483 7.990

INITIAL MEAN VALUE 10SD(NA) = 2.75×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co⁶⁰ Gammas

(8)10SD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

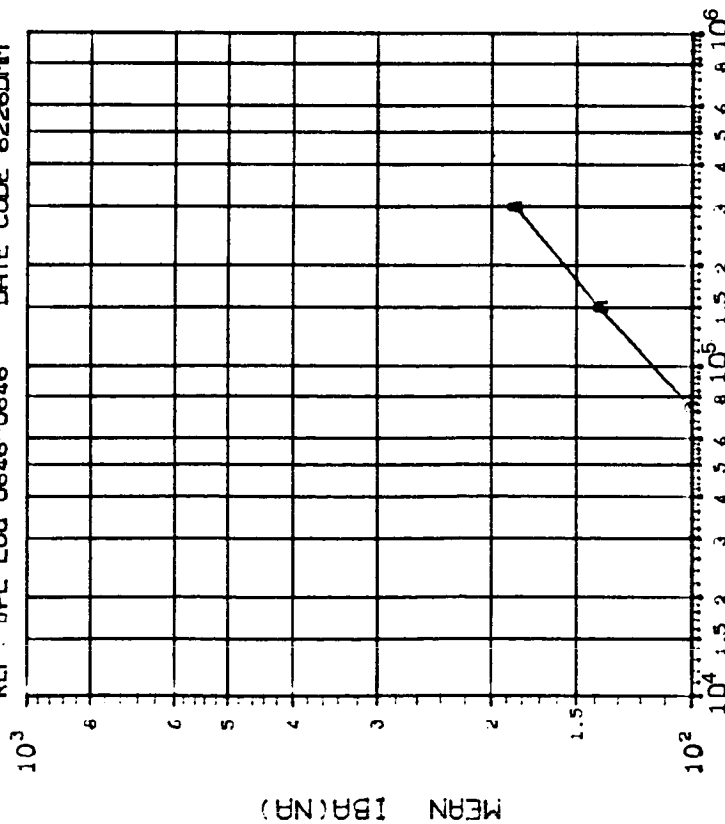
CURVE	DOSE, kilorads(Si)
	600 1000 2000
H	6.507 5.049 6.956

INITIAL MEAN VALUE 10SD(NA) = 2.15×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rads(Si) Co 60 Gammas

(111BA (V0=0) IN NA: VS DOSE

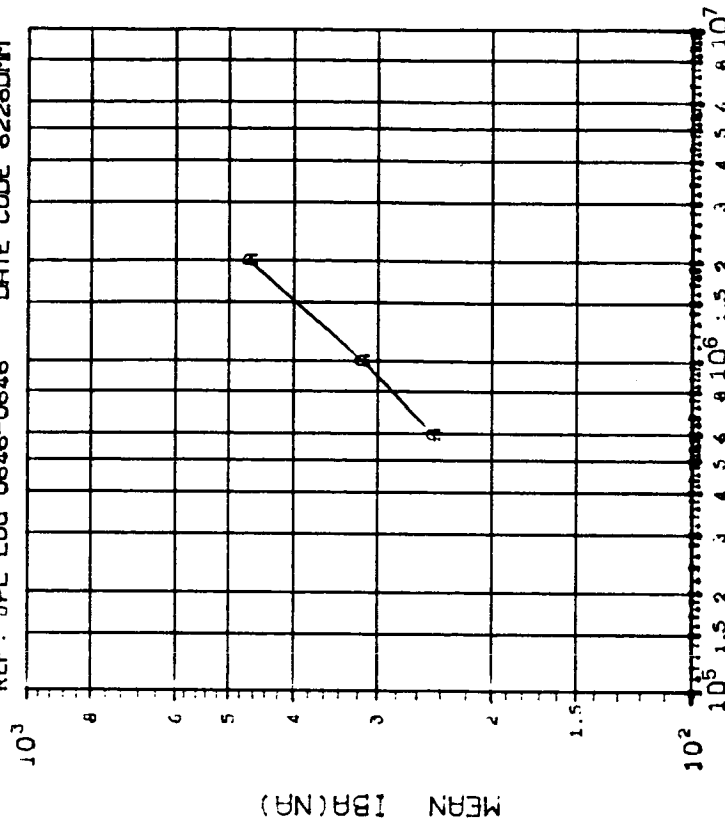
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
A	5.648
	7.500
	9.575

INITIAL MEAN VALUE IBA(NA) = 5.15X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



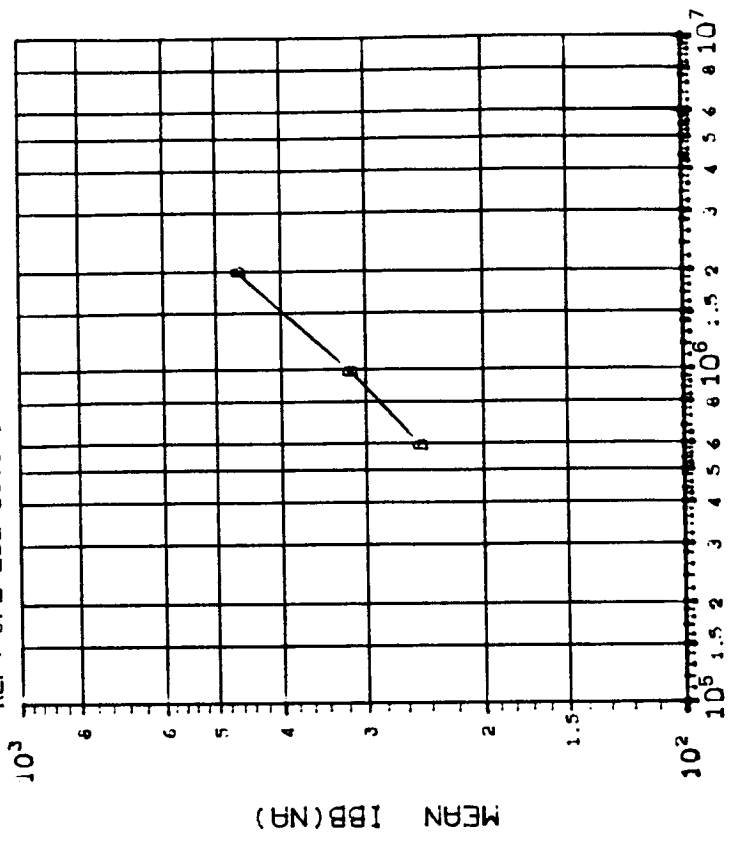
DOSE, rads(Si) Co 60 Gammas

(111BA (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600
	1000
	2000
A	12.35
	16.63
	26.65

INITIAL MEAN VALUE IBA(NA) = 5.15X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM

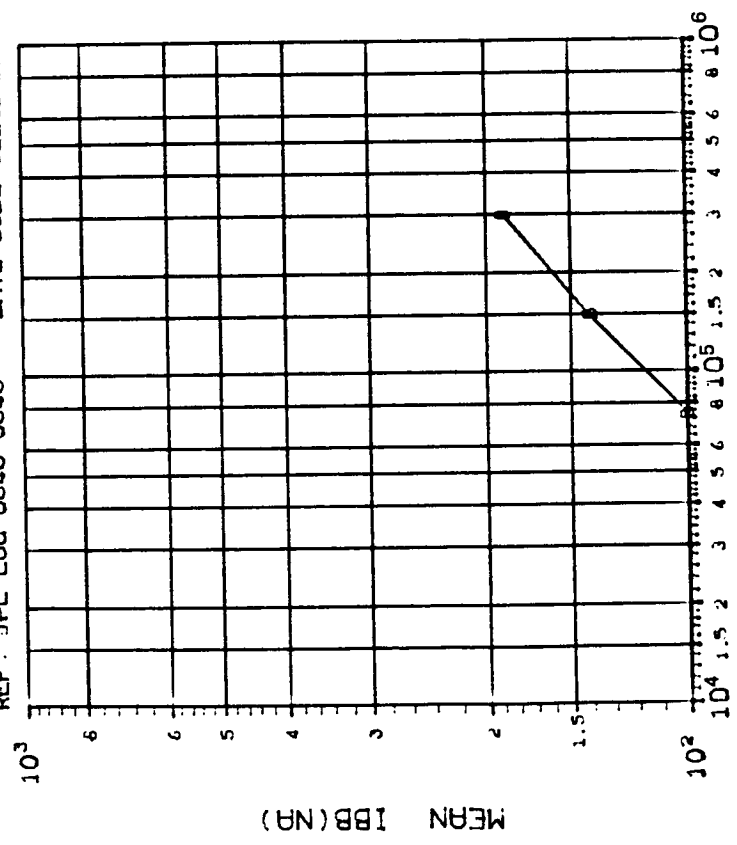


DOSE, rads(Si) Co 60 Gammas
 (211BB (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	23.16 24.11 34.02

INITIAL MEAN VALUE IB (NA) = $4.99 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co 60 Gammas
 (211BB (VO=0) IN NA: VS DOSE

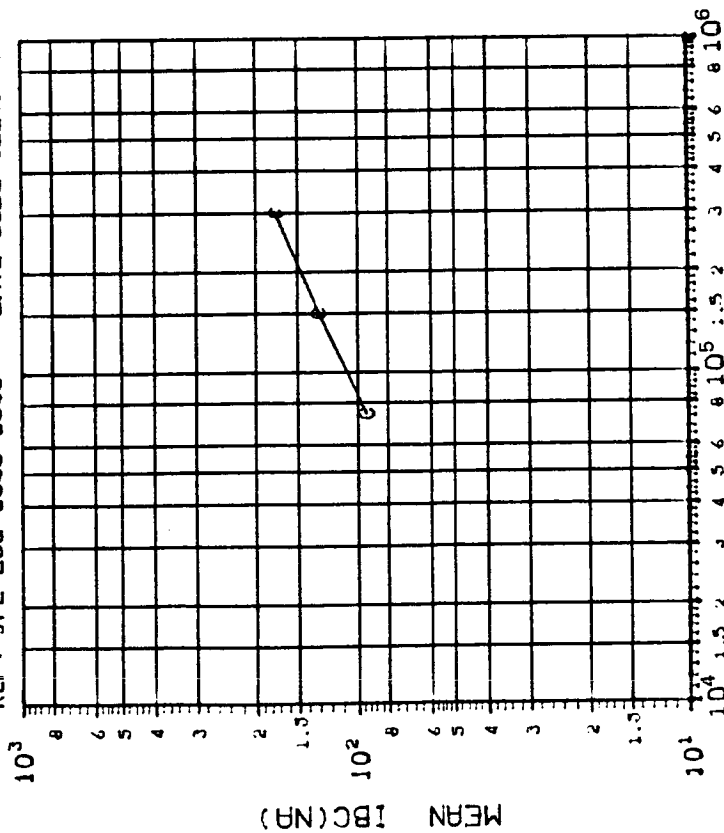
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	11.69 19.63 23.91

INITIAL MEAN VALUE IB (NA) = $4.99 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rad(Si) Co 60 Gammas

(311BC (V0=01) IN NA: VS DOSE

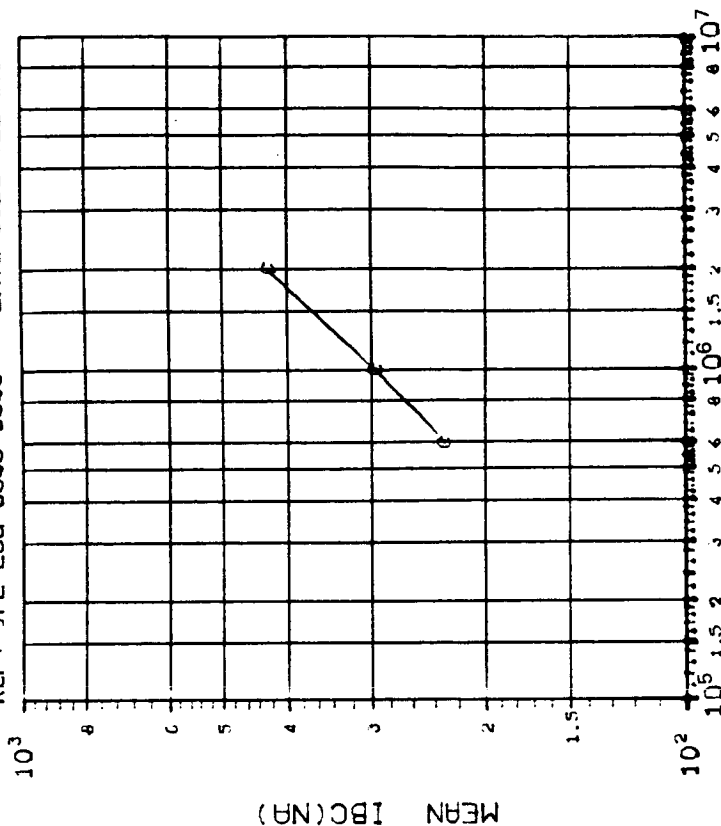
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
C	6.108 7.466 9.447

INITIAL MEAN VALUE IBC(NA) = 4.70×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rad(Si) Co 60 Gammas

(311BC (V0=01) IN NA: VS DOSE

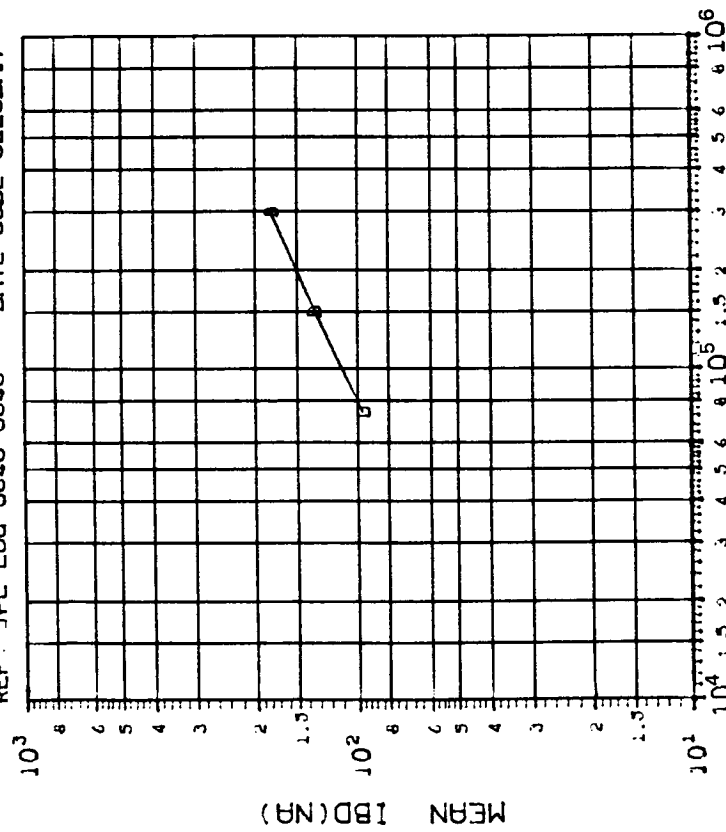
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600
	1000
	2000
C	12.23 16.31 26.33

INITIAL MEAN VALUE IBC(NA) = 4.70×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rad(Si) Co⁶⁰ Gammas

(4) IBD (V0=0) IN NA: VS DOSE

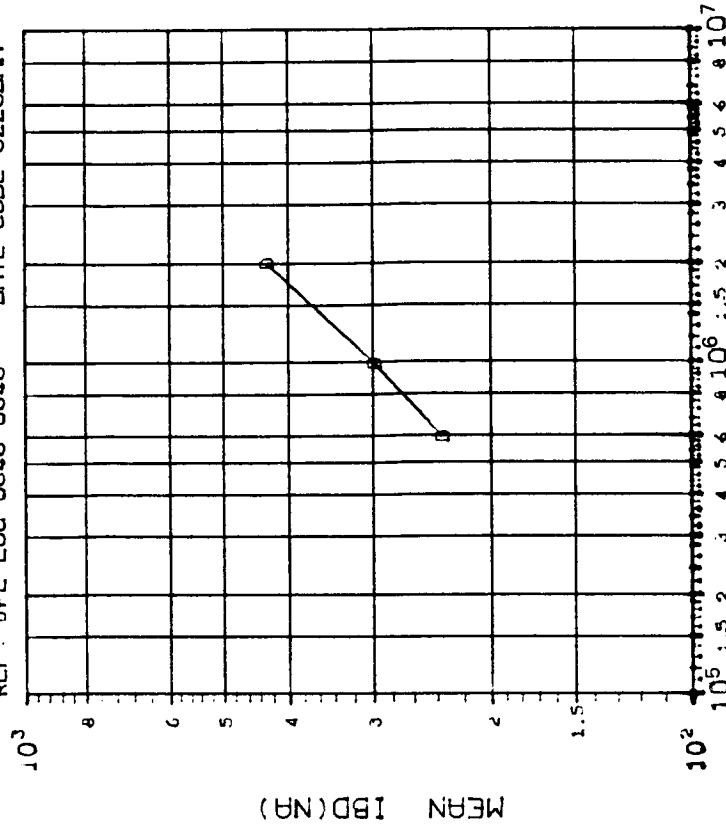
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
D	6.504	9.756
	11.97	

INITIAL MEAN VALUE IBD (NA) = 4.78X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rad(Si) Co⁶⁰ Gammas

(4) IBD (V0=0) IN NA: VS DOSE

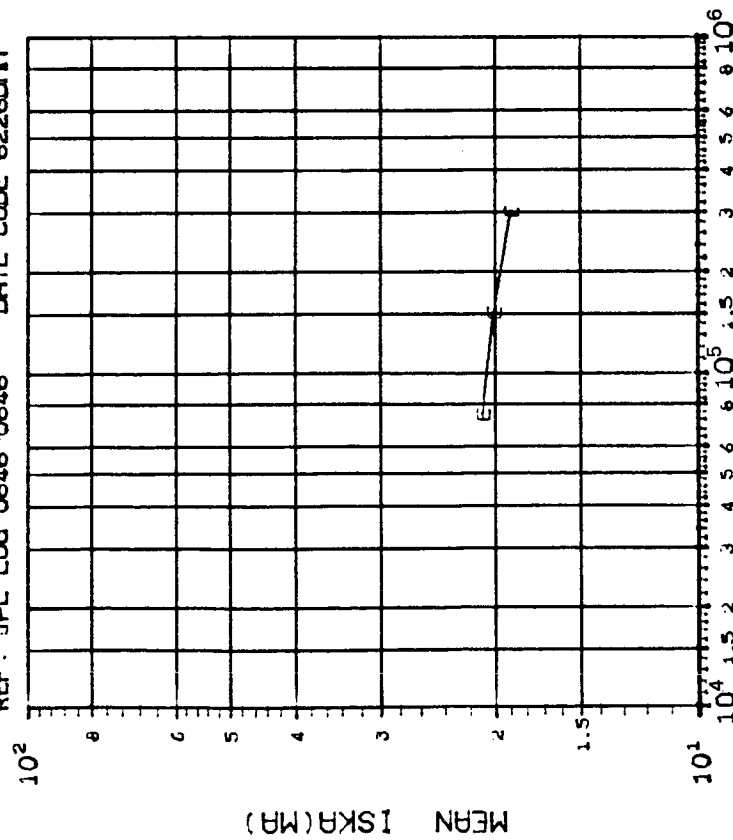
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000
D	13.27	16.56
	25.15	

INITIAL MEAN VALUE IBD (NA) = 4.78X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co 60 Gammas

(511SKA (V0E--V+1.5V, V1N--100MV) IN VS DOSE

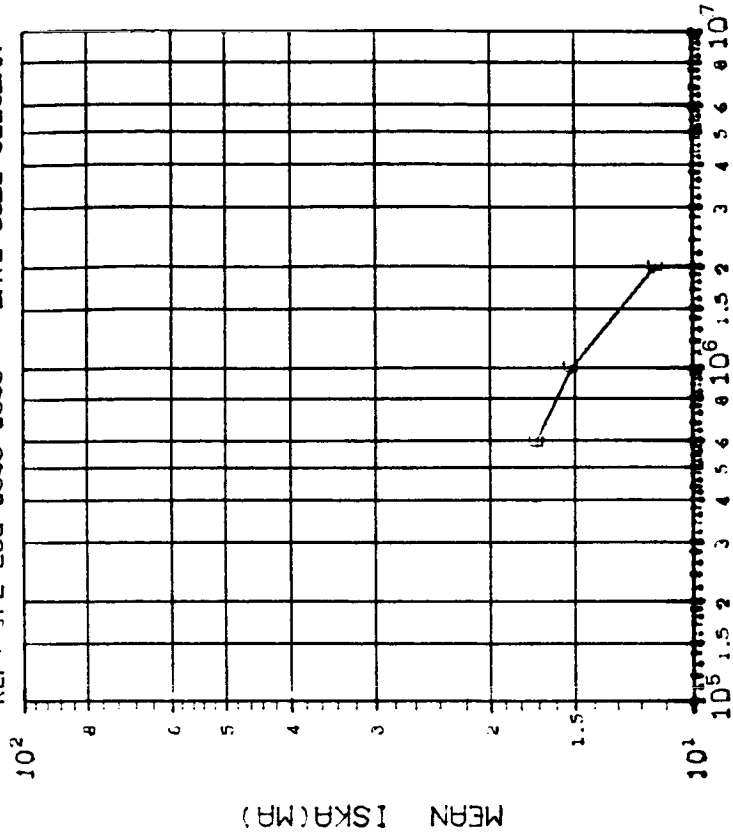
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
E	1.139 1.319 1.563

INITIAL MEAN VALUE ISKA(MA) = 2.26×10^{-11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DMM



DOSE, rads(Si) Co 60 Gammas

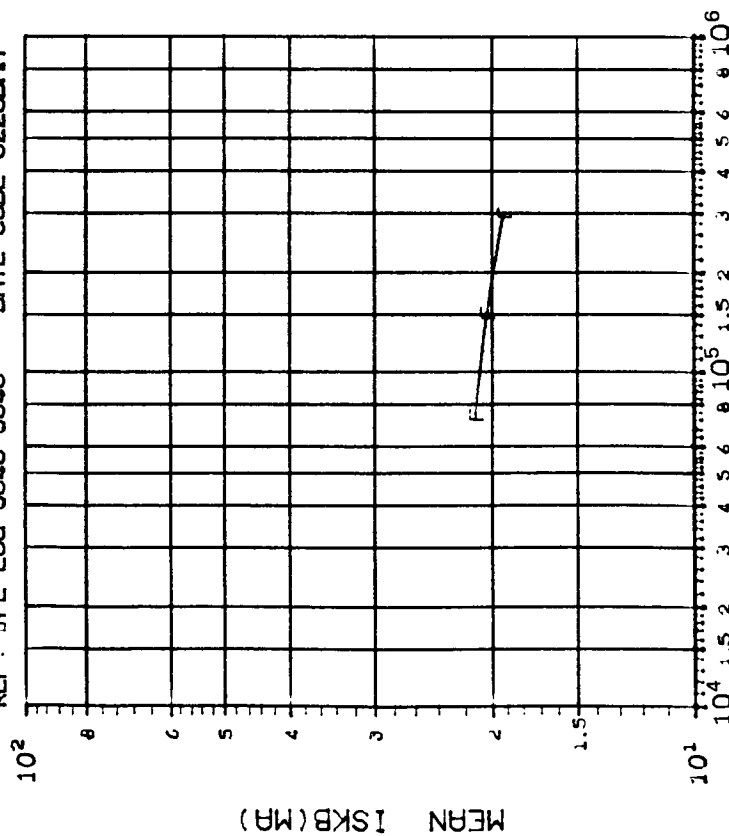
(511SKA (V0E--V+1.5V, V1N--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
E	1.683 2.014 1.646

INITIAL MEAN VALUE ISKA(MA) = 2.26×10^{-11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83
REF: JPL LOG 0846-0848 DATE CODE 8228DMM



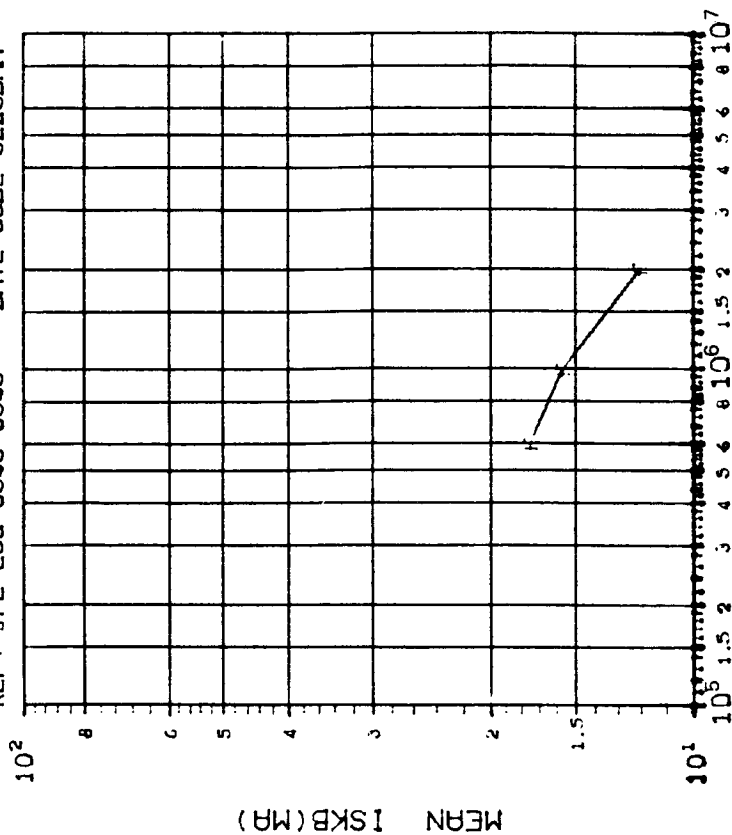
(611SKB (VOE--V+1.5V,VIN--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	1.240 1.360 1.650

INITIAL MEAN VALUE ISKB(MA) = $2.28 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83
REF: JPL LOG 0846-0848 DATE CODE 8228DMM



(611SKB (VOE--V+1.5V,VIN--100MV) IN VS DOSE

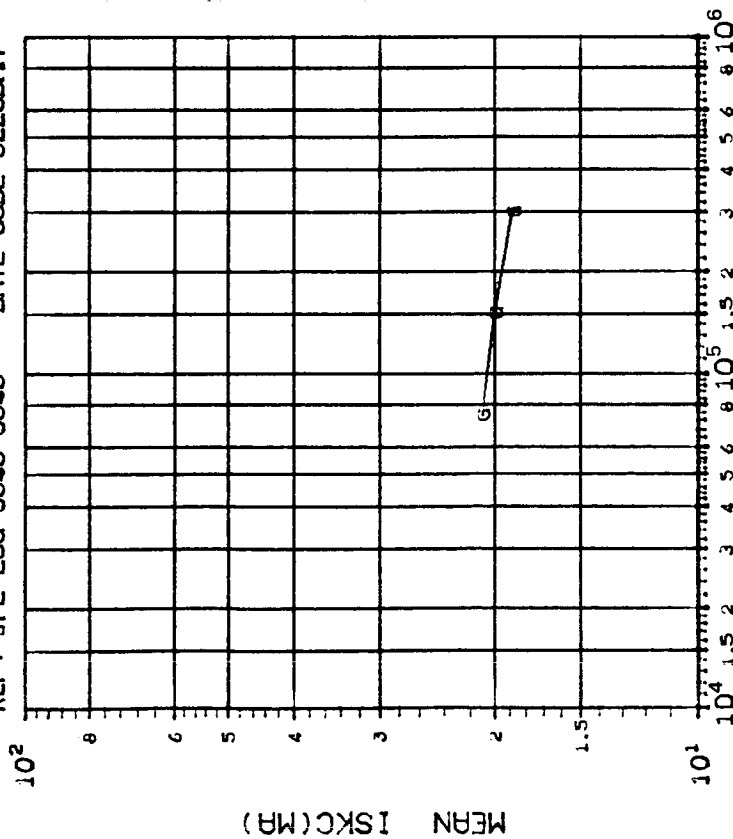
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	1.972 2.116 2.019

INITIAL MEAN VALUE ISKB(MA) = $2.28 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rads(Si) Co 60 Gammas

(7)ISKC (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

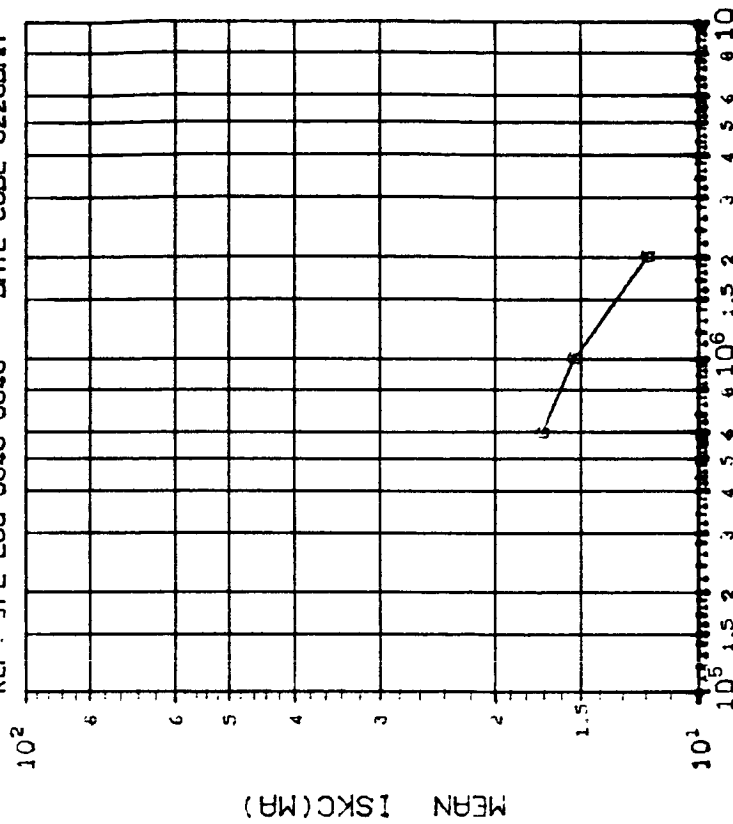
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
G	75	150
	150	300
	1.291	1.486
1.788		

INITIAL MEAN VALUE ISKC(MA) = 2.25×10^{-11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 8228DM1



DOSE, rads(Si) Co 60 Gammas

(7)ISKC (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

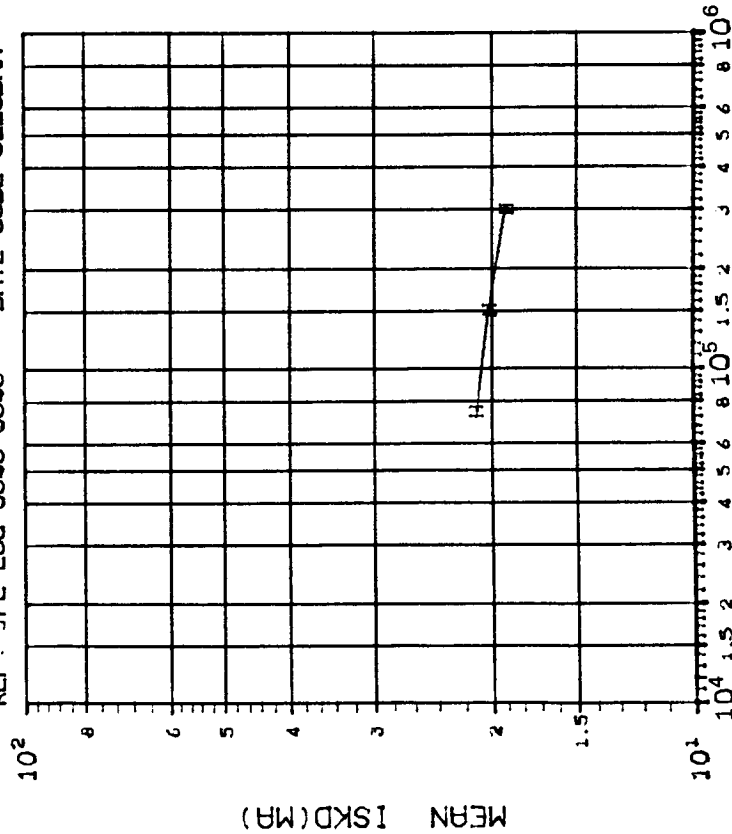
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
G	600	1000
	1000	2000
	2.070	2.177
2.033		

INITIAL MEAN VALUE ISKC(MA) = 2.25×10^{-11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 82280MM



(8)ISKD (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

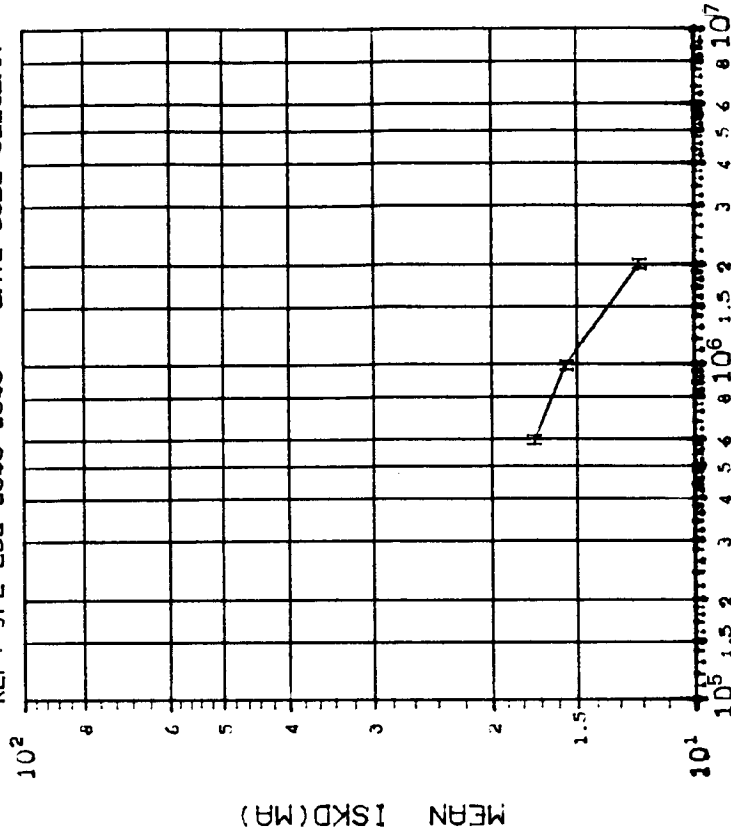
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	.9321 1.067 1.306

INITIAL MEAN VALUE ISKD(MA) = $2.25 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0846-0848 DATE CODE 82280MM



(8)ISKD (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

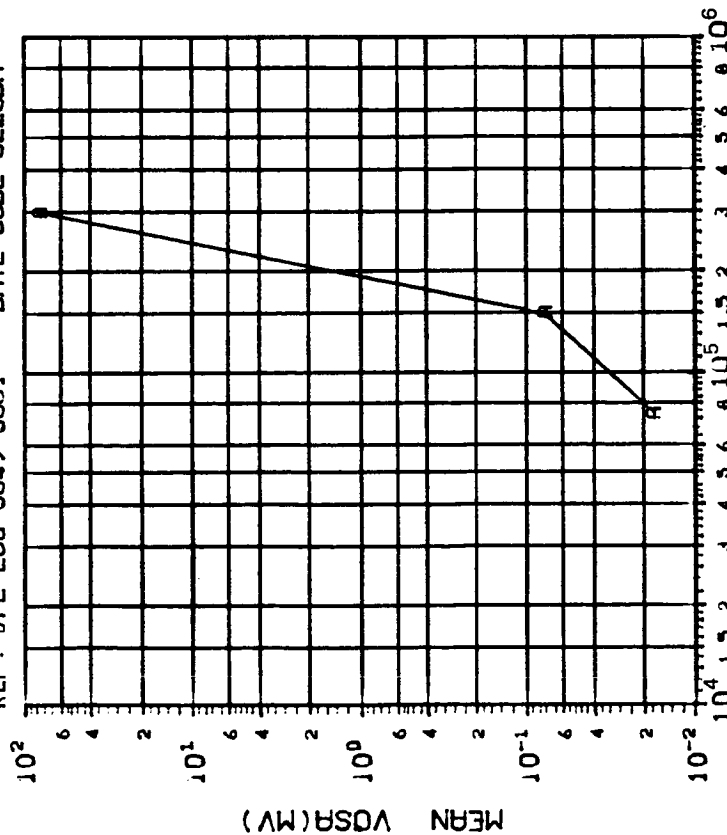
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	1.599 1.761 1.732

INITIAL MEAN VALUE ISKD(MA) = $2.25 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

(11)VOSA (V0=0) IN MV: VS DOSE

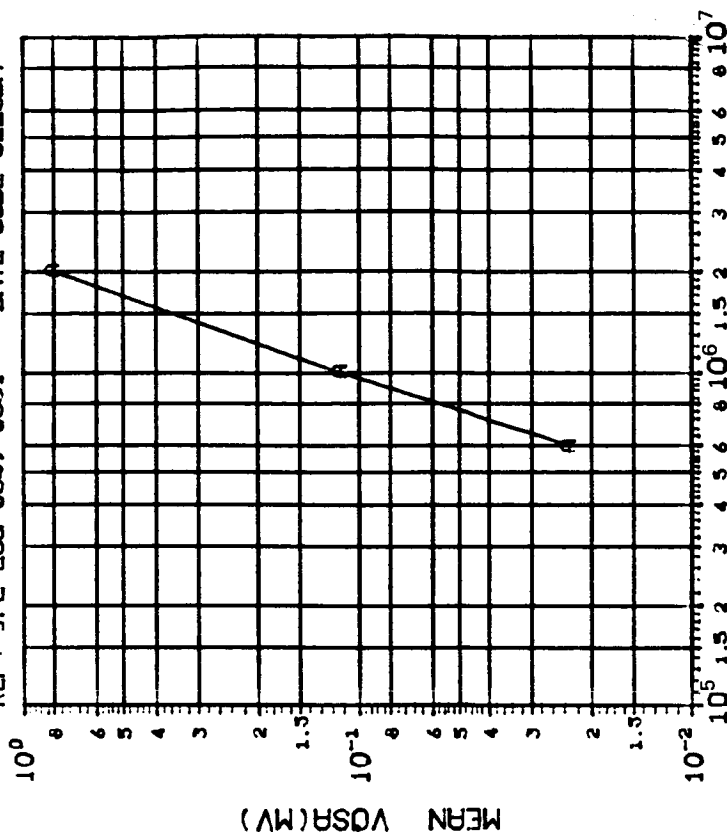
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
A	.8619 .6330 244.7

INITIAL MEAN VALUE VOSA(MV) = 8.18×10^{-2}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

(11)VOSA (V0=0) IN MV: VS DOSE

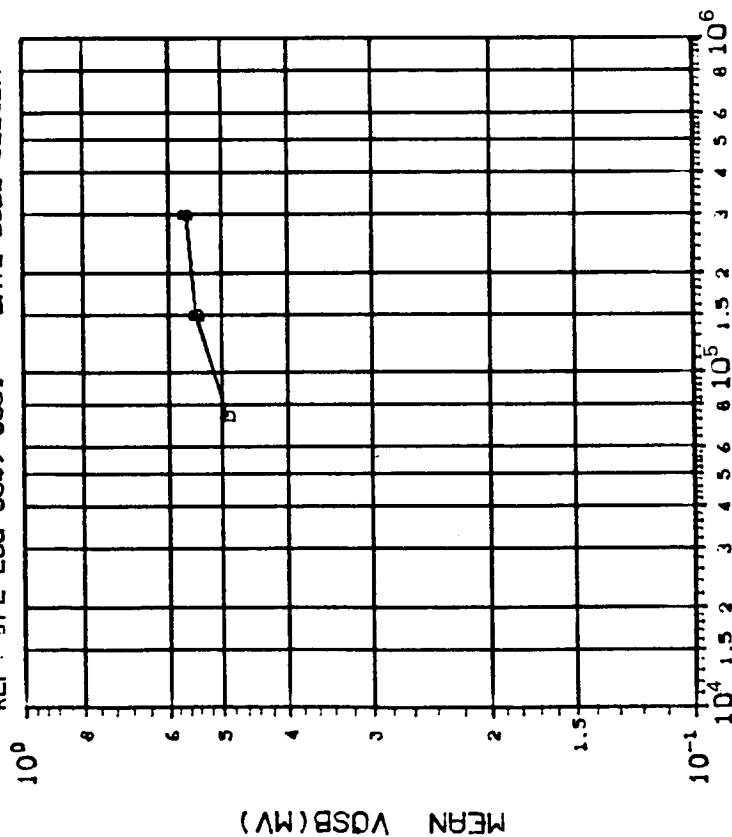
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600
	1000
	2000
A	.7531 .7196 .6788

INITIAL MEAN VALUE VOSA(MV) = 8.18×10^{-2}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

(21)VOSB (V0=0) IN MV: VS DOSE

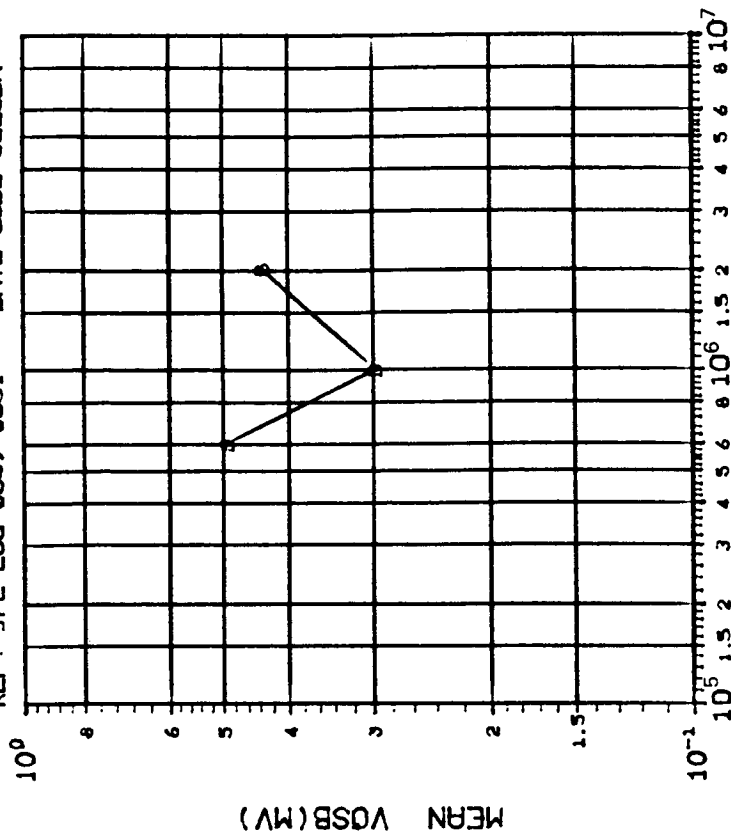
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	300
B	.5018	.4907

INITIAL MEAN VALUE VOSB(MV) = 3.90×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

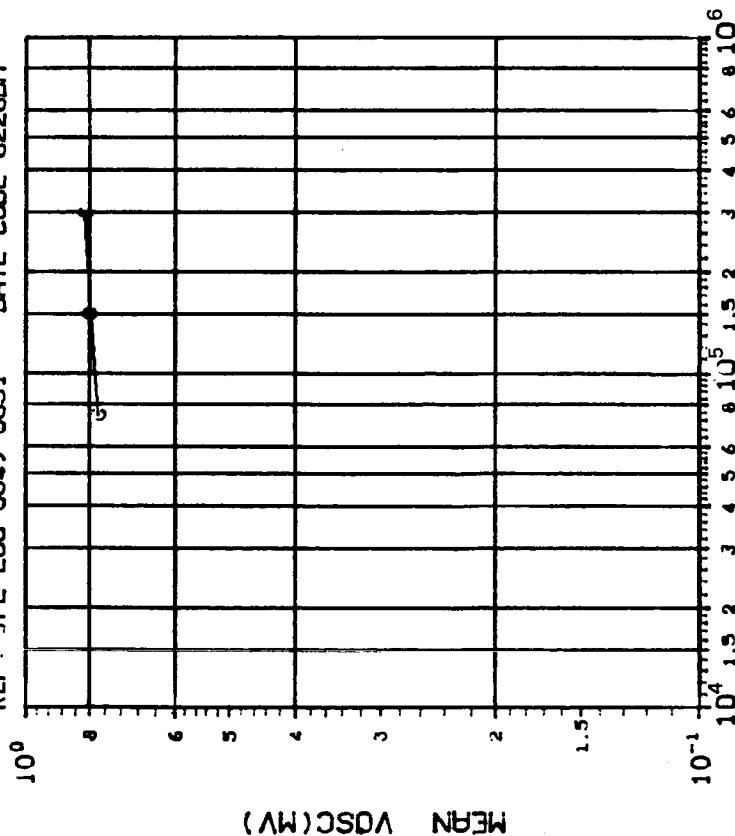
(21)VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	2000
B	.4710	.4370

INITIAL MEAN VALUE VOSB(MV) = 3.90×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co ⁶⁰ Gammas

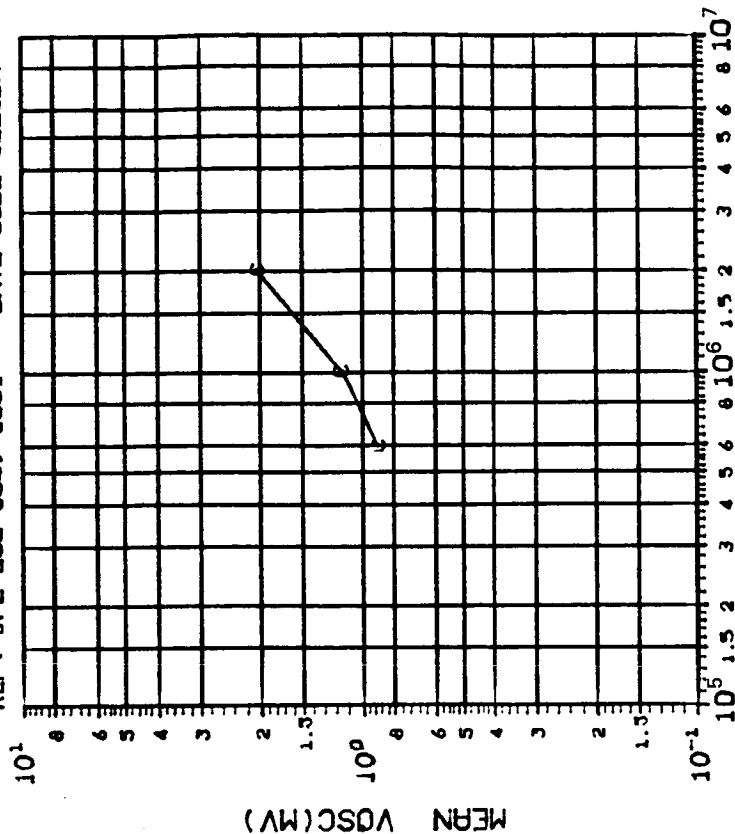
(3)VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75 150 300	
C	.4471 .4444 .4376	

INITIAL MEAN VALUE VOSC(MV) = 7.57×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co ⁶⁰ Gammas

(3)VOSC (V0=0) IN MV: VS DOSE

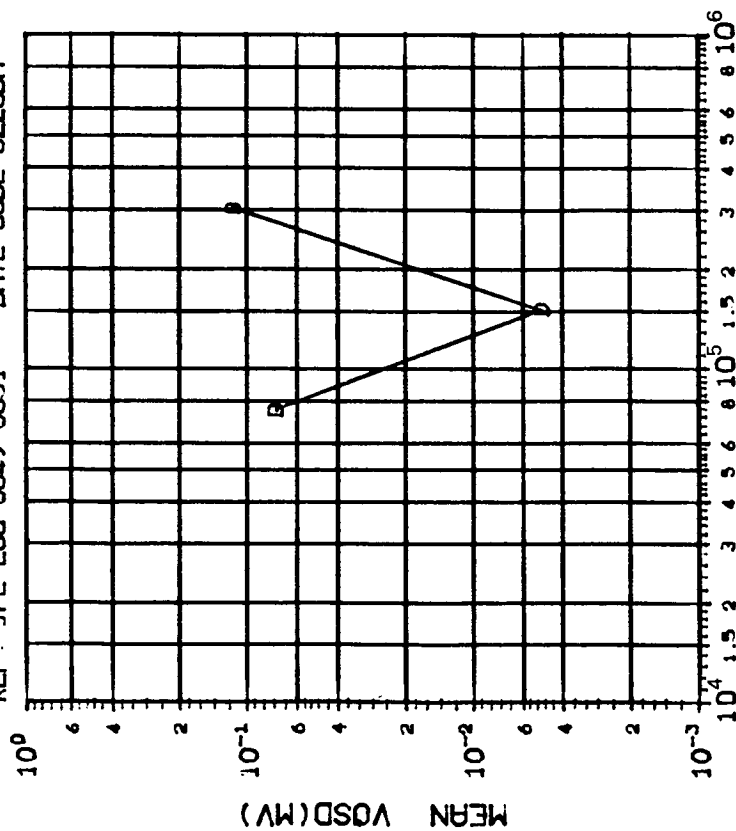
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600 1000 2000	
C	.4560 .4895 .4661	

INITIAL MEAN VALUE VOSC(MV) = 7.57×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

(4)VOSD (VO=0) IN MV: VS DOSE

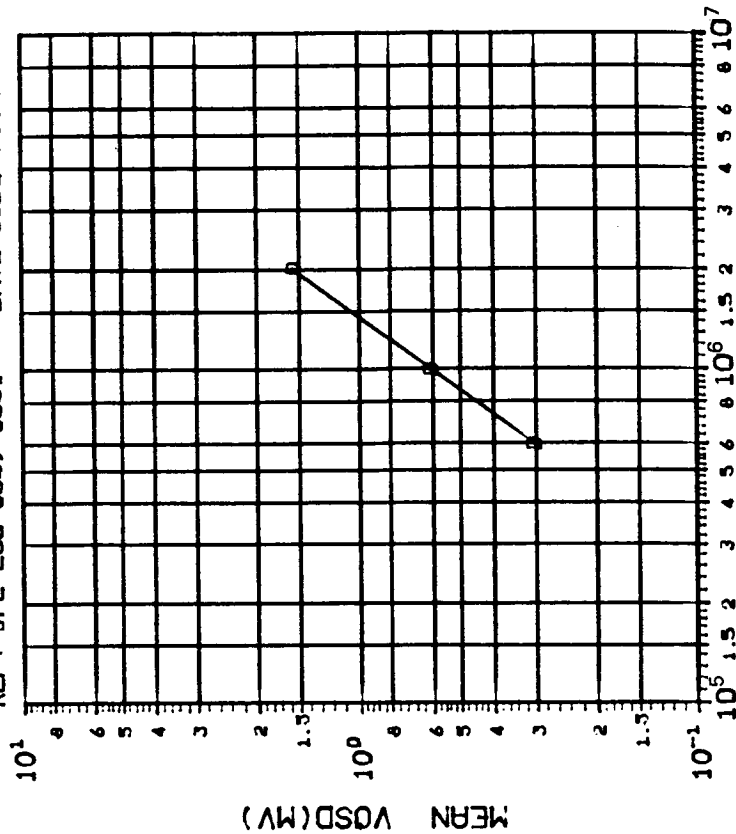
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
D	.4512	.4388
	.4272	

INITIAL MEAN VALUE VOSD(MV) = 1.40×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

(4)VOSD (VO=0) IN MV: VS DOSE

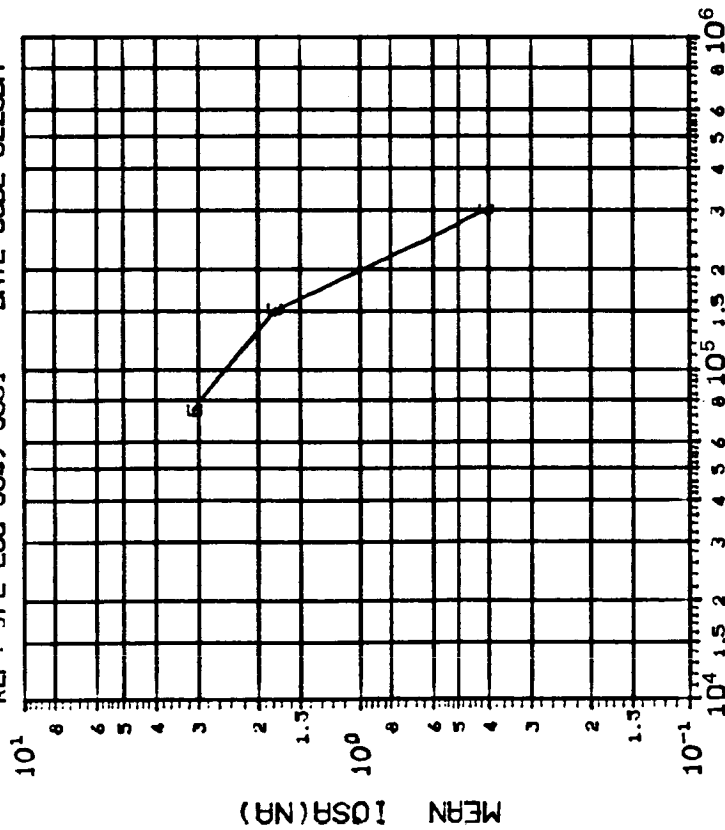
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000
D	.4145	.4113
	.4526	

INITIAL MEAN VALUE VOSD(MV) = 1.40×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

(5110SA (V0=0) IN NA: VS DOSE

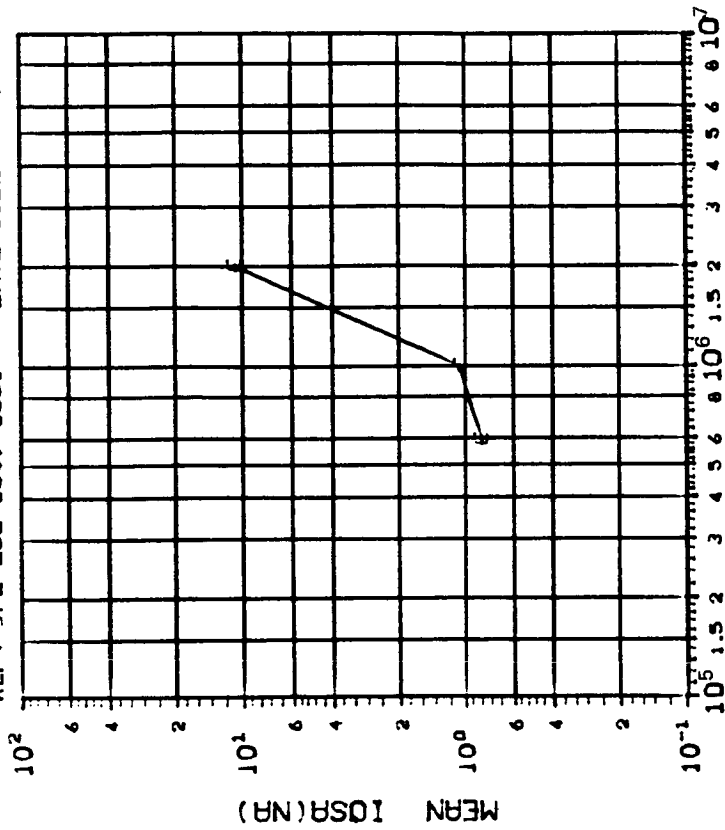
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75
	150
	300
E	1.961 2.699 4.964

INITIAL MEAN VALUE IOSR(NA) = 3.15X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

(5110SA (V0=0) IN NA: VS DOSE

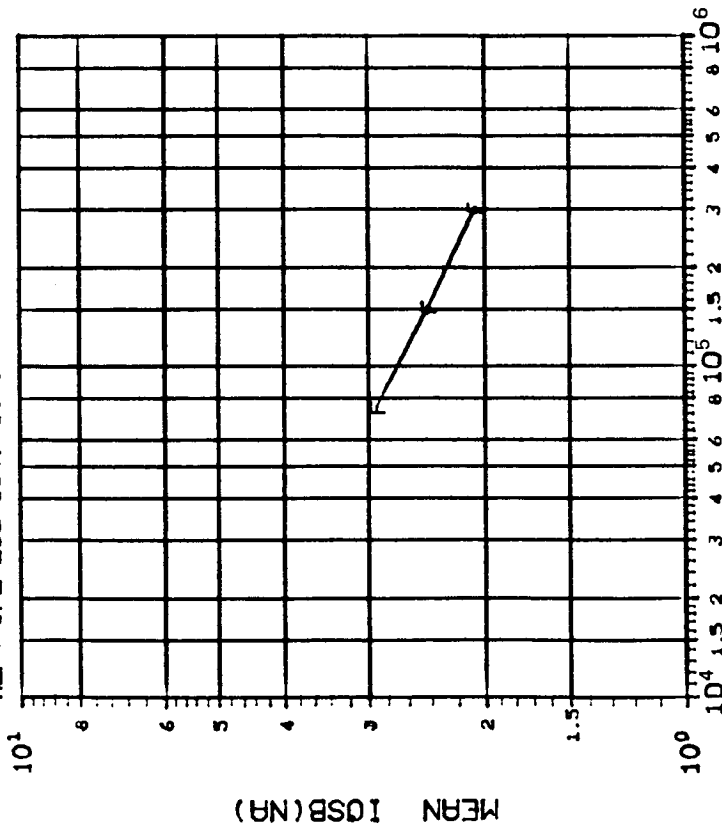
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600
	1000
	2000
E	6.142 5.711 4.353

INITIAL MEAN VALUE IOSR(NA) = 3.15X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 82280M



(6)IOSB (V0=0) IN NA: VS DOSE

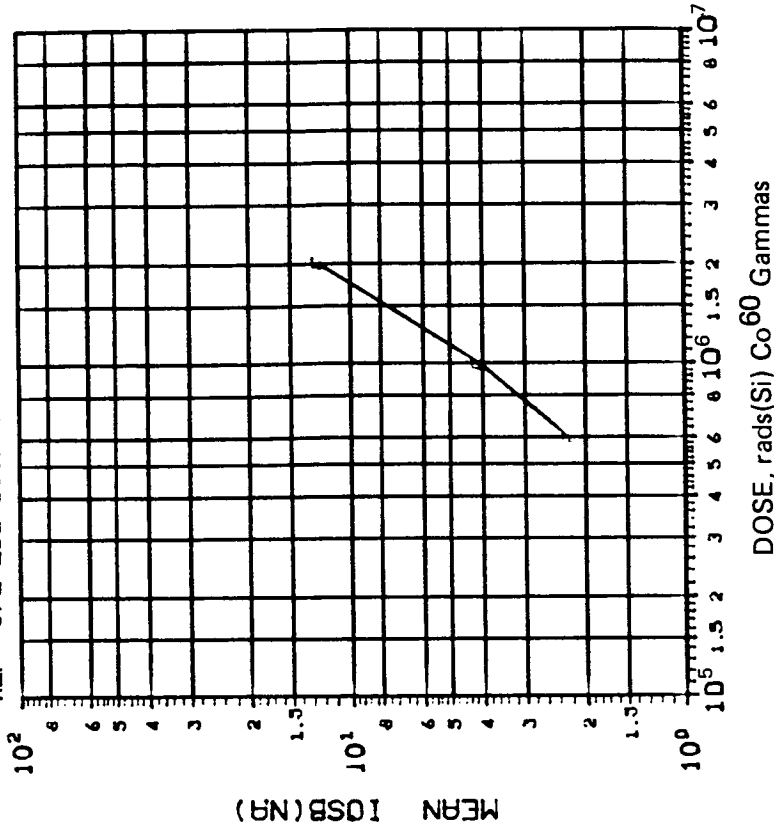
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
F	1.037	1.326 1.714

INITIAL MEAN VALUE IOSB(NA) = 3.98×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 82280M

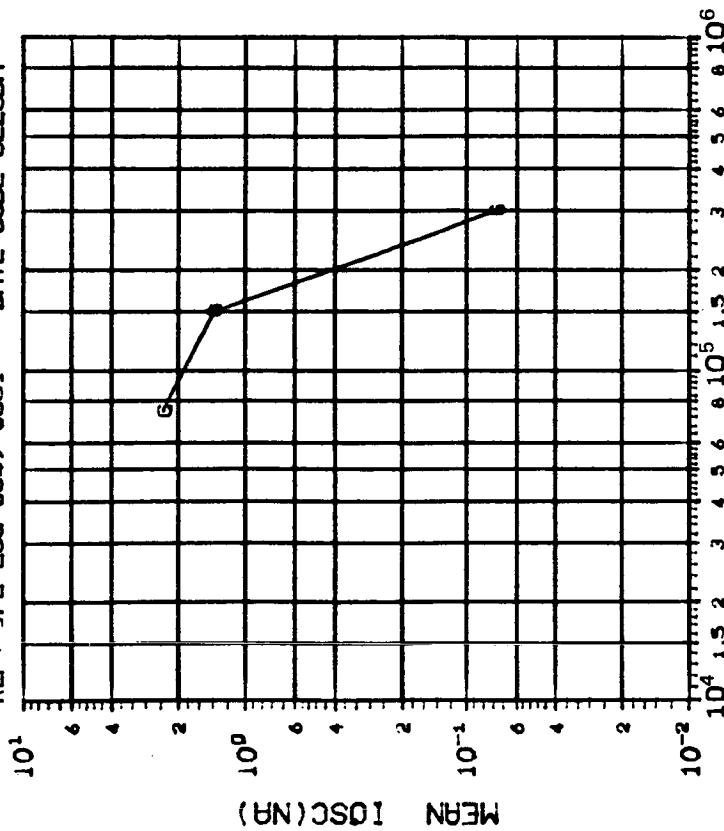


(6)IOSB (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000 2000
F	1.546	1.925 2.922

INITIAL MEAN VALUE IOSB(NA) = 3.98×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0849-0851 DATE CODE 82280M

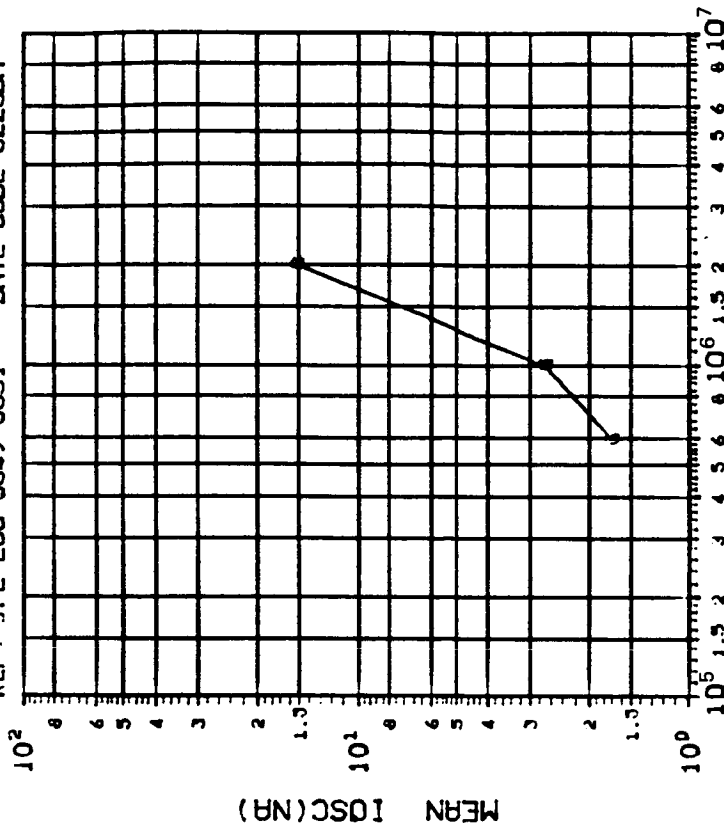


(7)IOSC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	1.681 2.348 3.232

INITIAL MEAN VALUE IOSC(NA) = 3.61×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0849-0851 DATE CODE 82280M

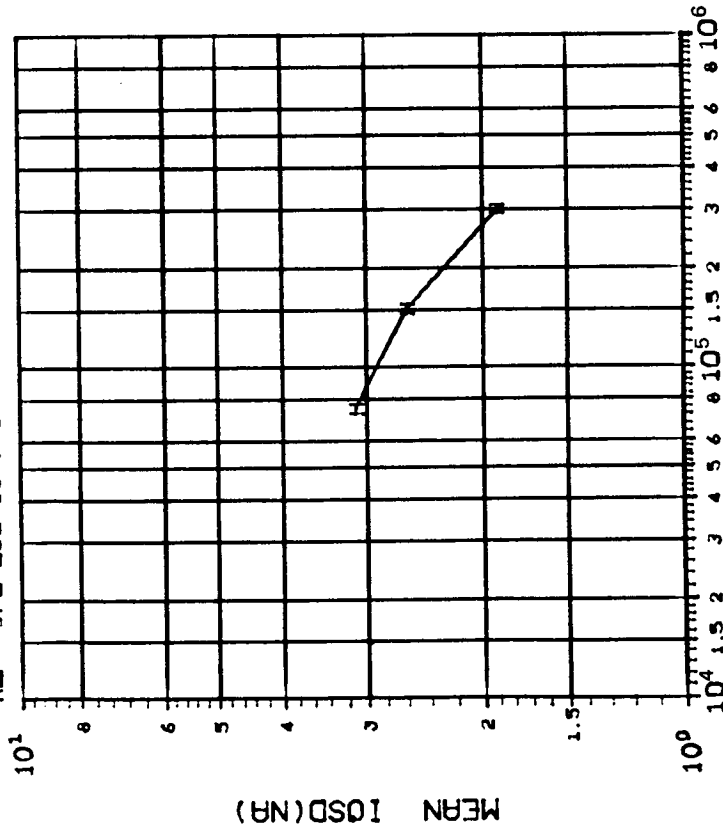


(7)IOSC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	3.458 3.741 3.616

INITIAL MEAN VALUE IOSC(NA) = 3.61×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM



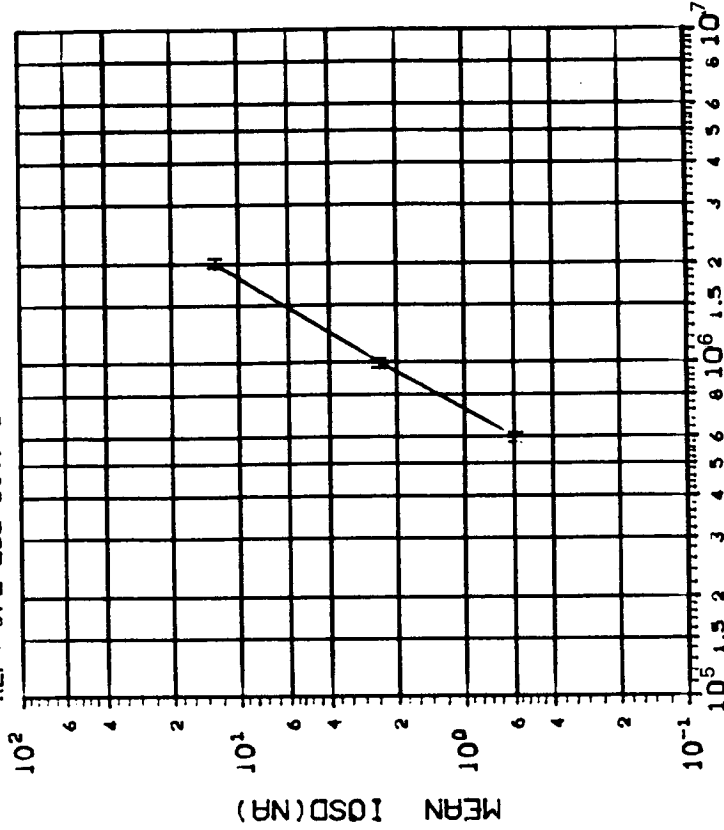
DOSE, rads(Si) Co 60 Gammas

(8)IOSD (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
H	2.070 2.993 3.533

INITIAL MEAN VALUE IOSD(NA) = 3.81×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM



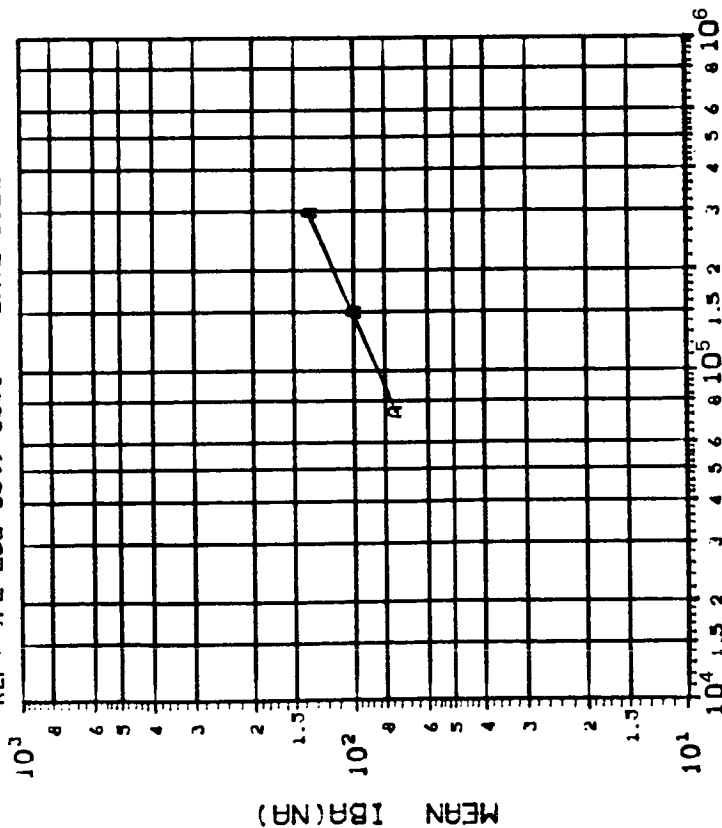
DOSE, rads(Si) Co 60 Gammas

(8)IOSD (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
H	3.680 3.437 4.507

INITIAL MEAN VALUE IOSD(NA) = 3.81×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM



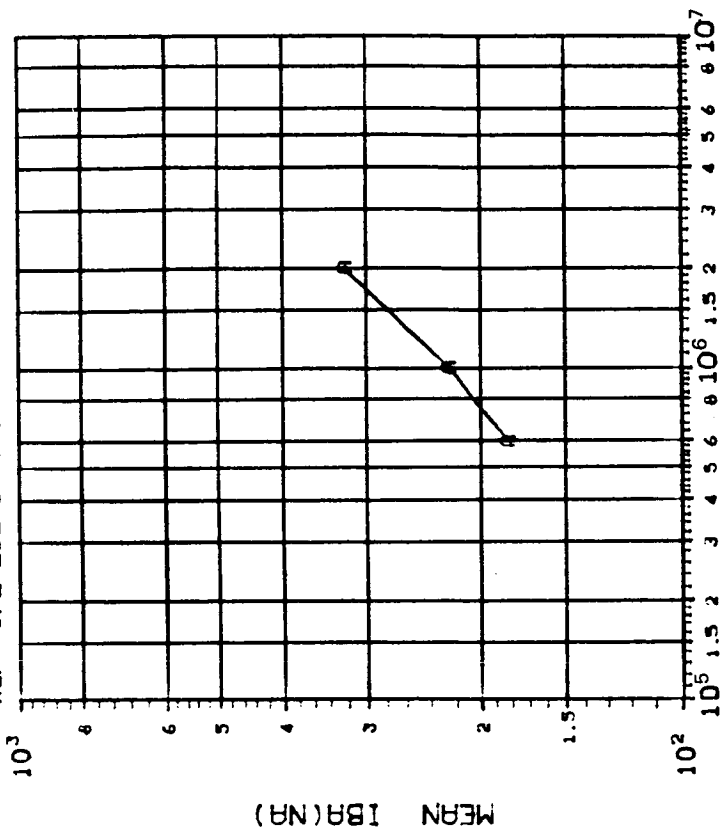
DOSE, rads(Si) Co60 Gammas

(11)BA (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
A	3.961 3.416 6.063

INITIAL MEAN VALUE 1BA(NA) = 4.79X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM



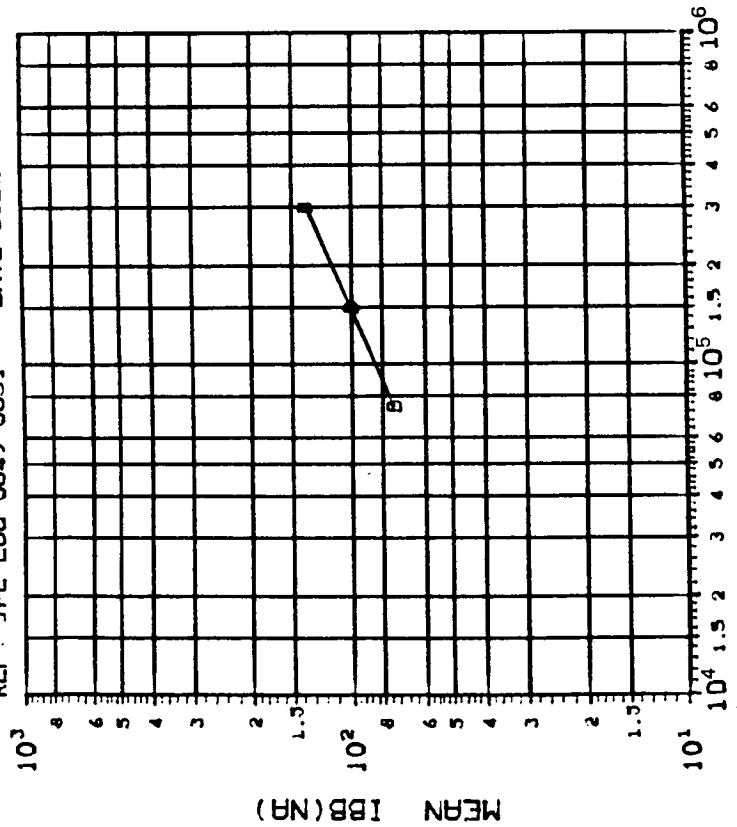
DOSE, rads(Si) Co60 Gammas

(11)BA (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600
	1000
	2000
A	10.77 13.93 21.69

INITIAL MEAN VALUE 1BA(NA) = 4.79X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM



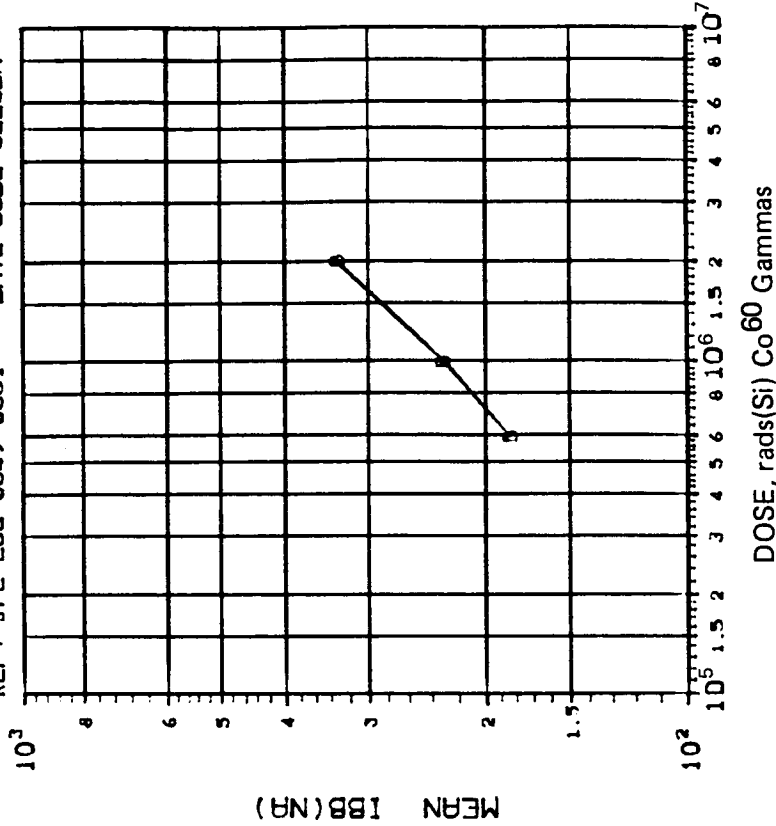
DOSE, rads(Si) Co 60 Gammas

(2)1BB (V0=0) IN NA : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
3.623 4.613 7.731	

INITIAL MEAN VALUE 1BB(NA) = 4.76×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM



DOSE, rads(Si) Co 60 Gammas

(2)1BB (V0=0) IN NA : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600
	1000
	2000
10.16 13.34 19.60	

INITIAL MEAN VALUE 1BB(NA) = 4.76×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM

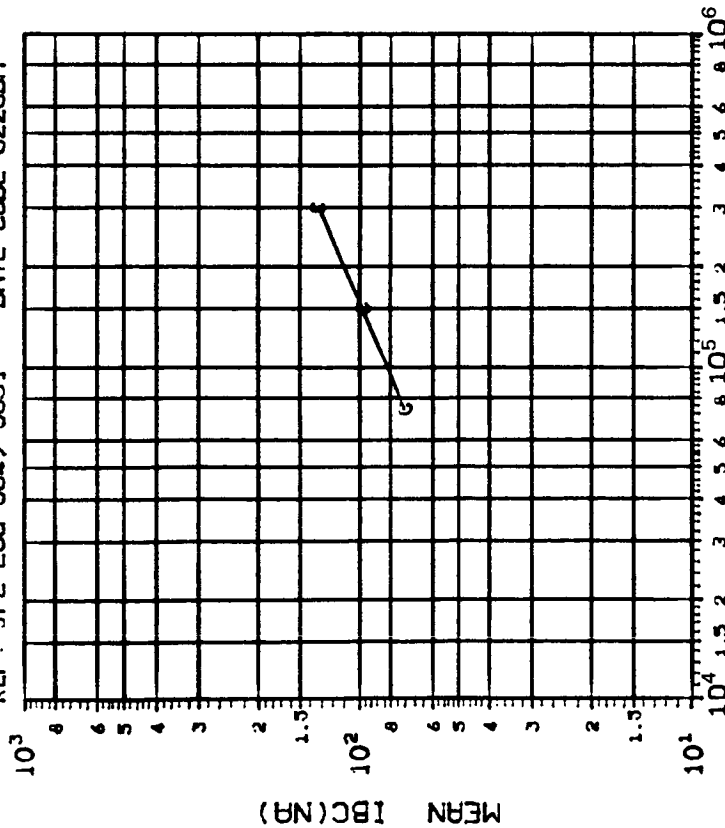


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300

INITIAL MEAN VALUE IBC(NR) = 4.60×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM

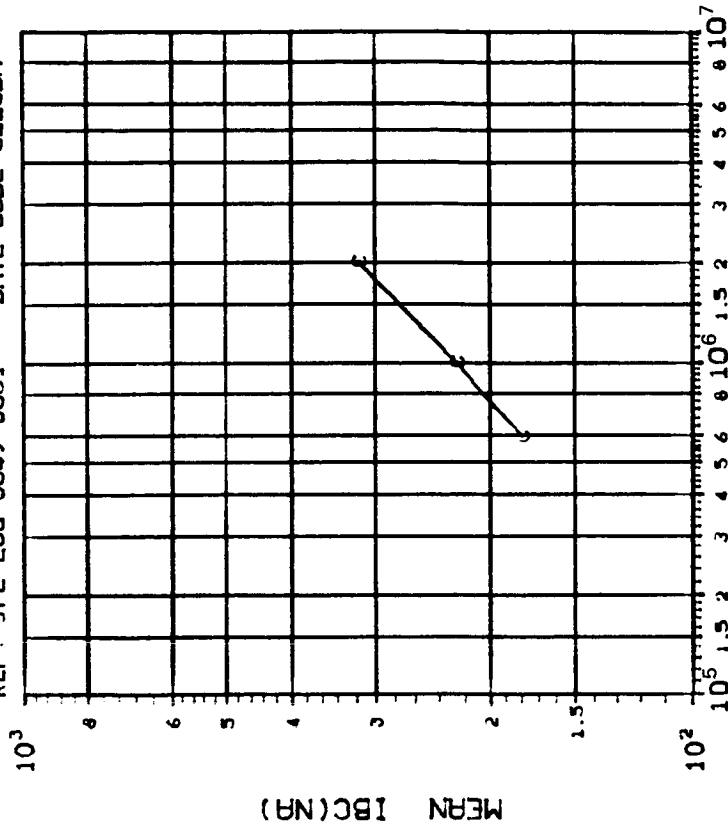
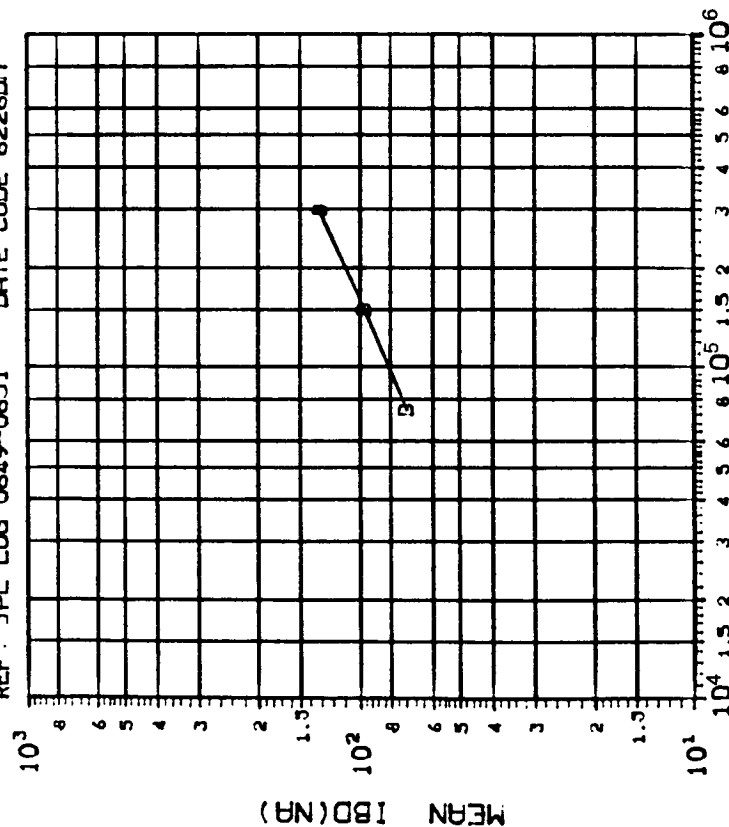


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000

INITIAL MEAN VALUE IBC(NR) = 4.60×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

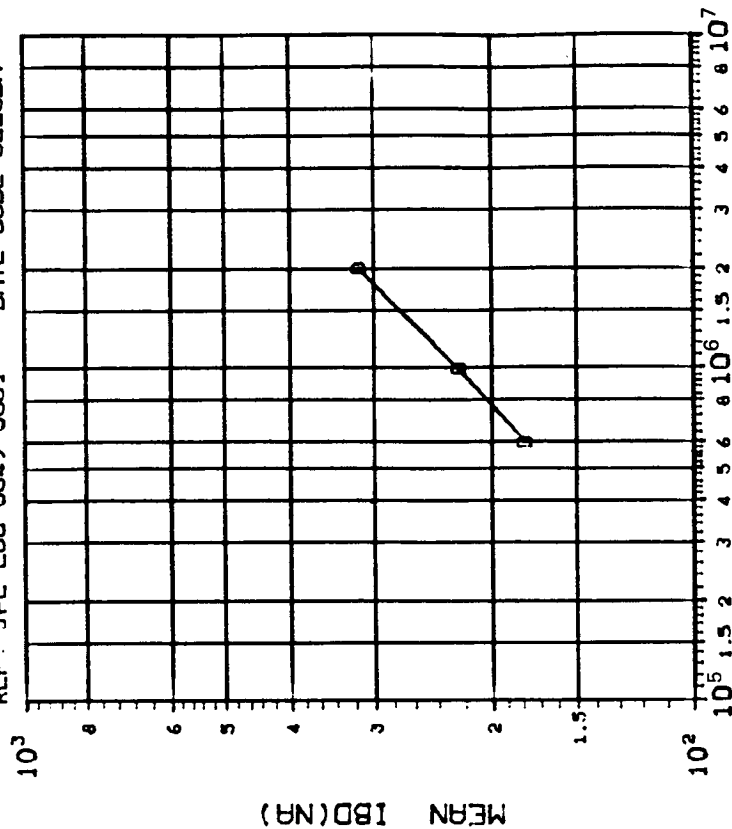


(4)IBD (V0=0) 1N NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
D	2.667 3.629 5.660

INITIAL MEAN VALUE IBD(NA) = 4.55X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0849-0851 DATE CODE 8228DM

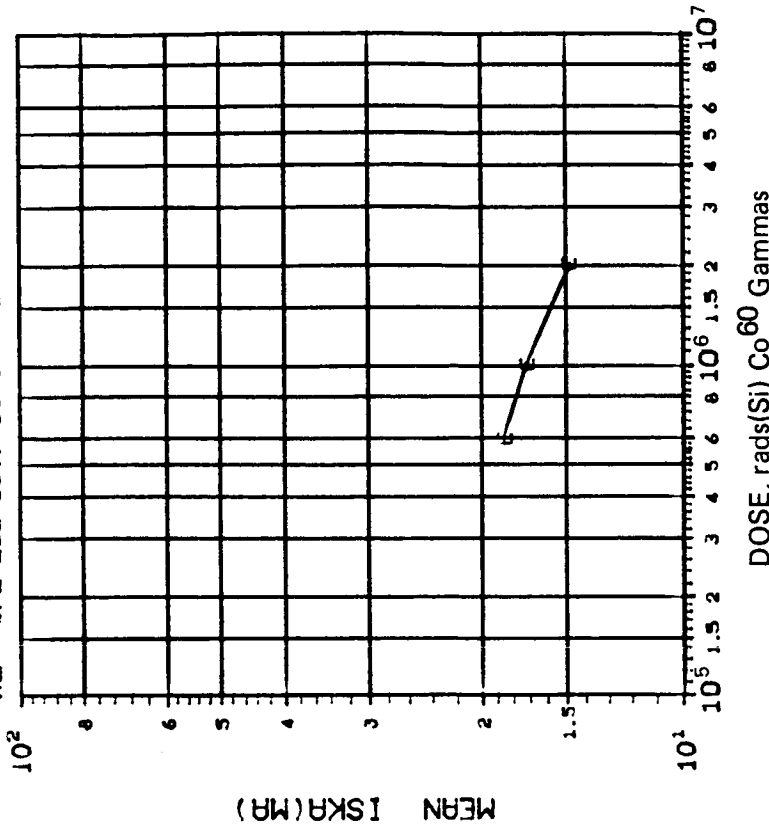


(4)IBD (V0=0) 1N NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
D	7.249 10.17 15.69

INITIAL MEAN VALUE IBD(NA) = 4.55X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-63
REF: JPL LOG 0849-0851 DATE CODE 82280M

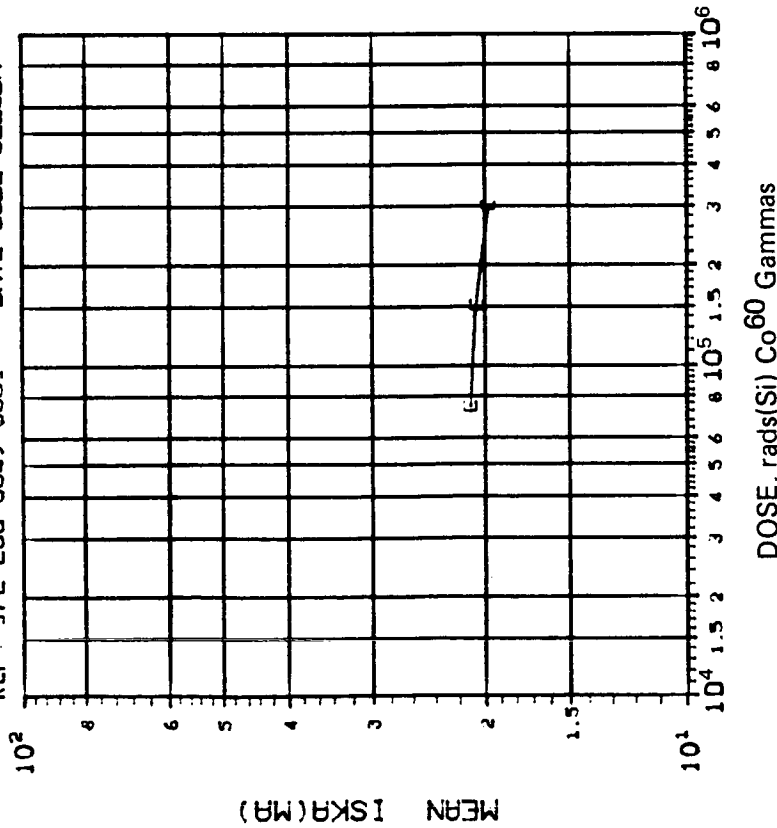


(5) ISKA (V₀=-V+1.5V, V_{IN}=-100mV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	2000
E	.6185	.7406 1.025

INITIAL MEAN VALUE ISKA(MA) = 2.23X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-63
REF: JPL LOG 0849-0851 DATE CODE 82280M

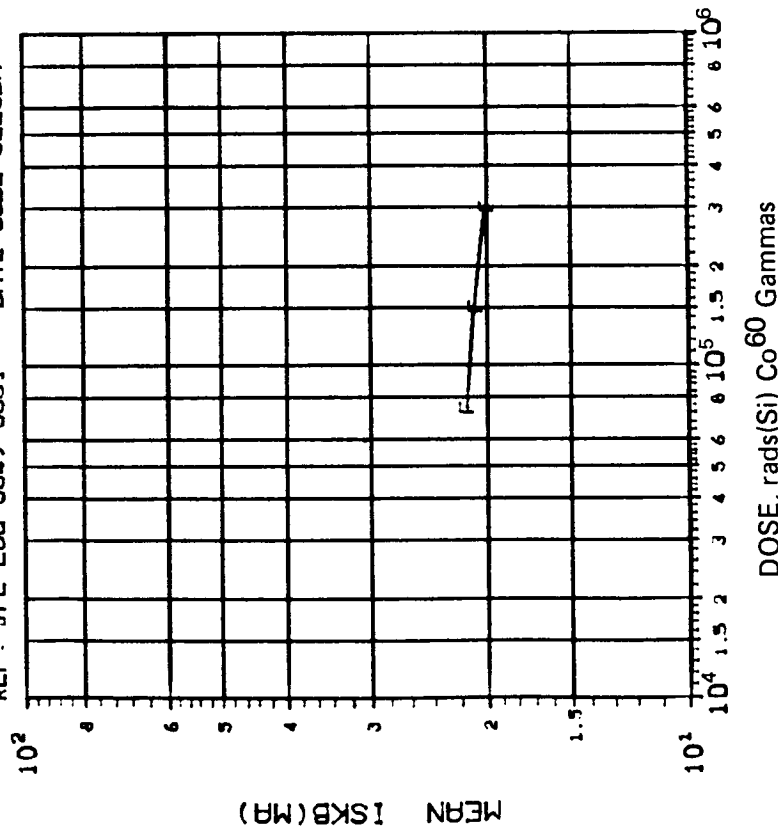


(5) ISKA (V₀=-V+1.5V, V_{IN}=-100mV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	300
E	.6406	.6415 .6160

INITIAL MEAN VALUE ISKA(MA) = 2.23X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0849-0851 DATE CODE 8228DM

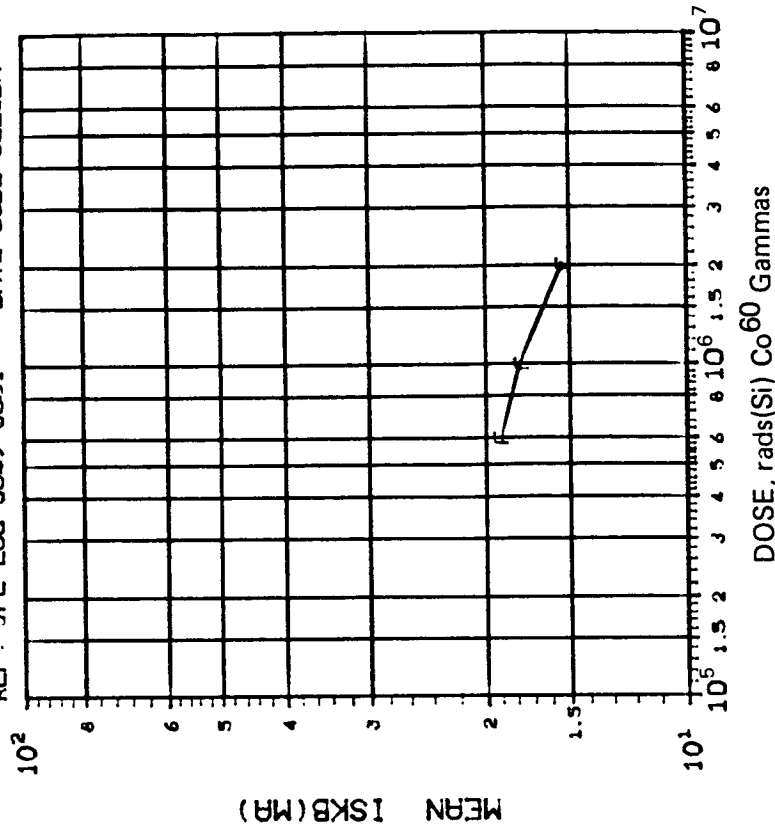


(61)SKB (V0=-V+1.5V, V1E=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
F	.9975 .9621 .9480

INITIAL MEAN VALUE ISKB(MA) = 2.25X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0849-0851 DATE CODE 8228DM

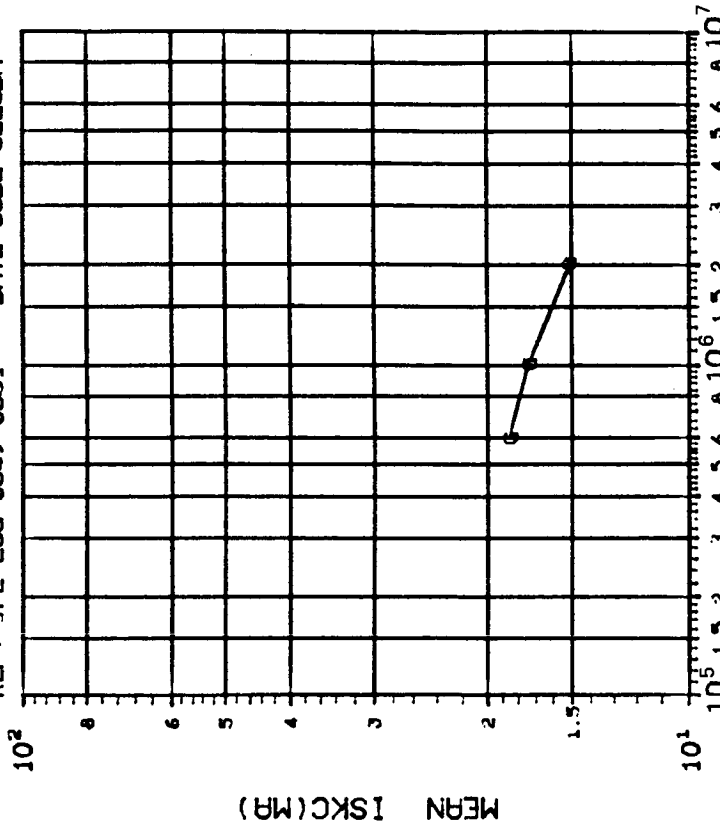


(61)SKB (V0=-V+1.5V, V1E=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
F	.9013 .9123 1.040

INITIAL MEAN VALUE ISKB(MA) = 2.25X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0849-0851 DATE CODE 82280M

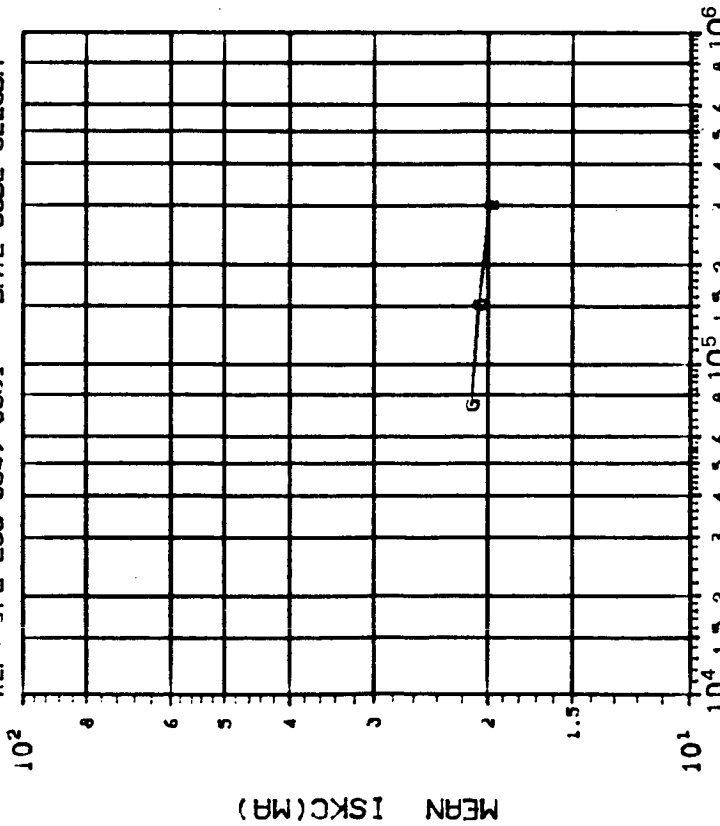


(7) ISKC (V0E--V+1.5V, VINE--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	.6647 .7175 .9059

INITIAL MEAN VALUE ISKC(MA) = 2.24×10^{-11}

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0849-0851 DATE CODE 82280M



(7) ISKC (V0E--V+1.5V, VINE--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	.7168 .7332 .6783

INITIAL MEAN VALUE ISKC(MA) = 2.24×10^{-11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: QMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM

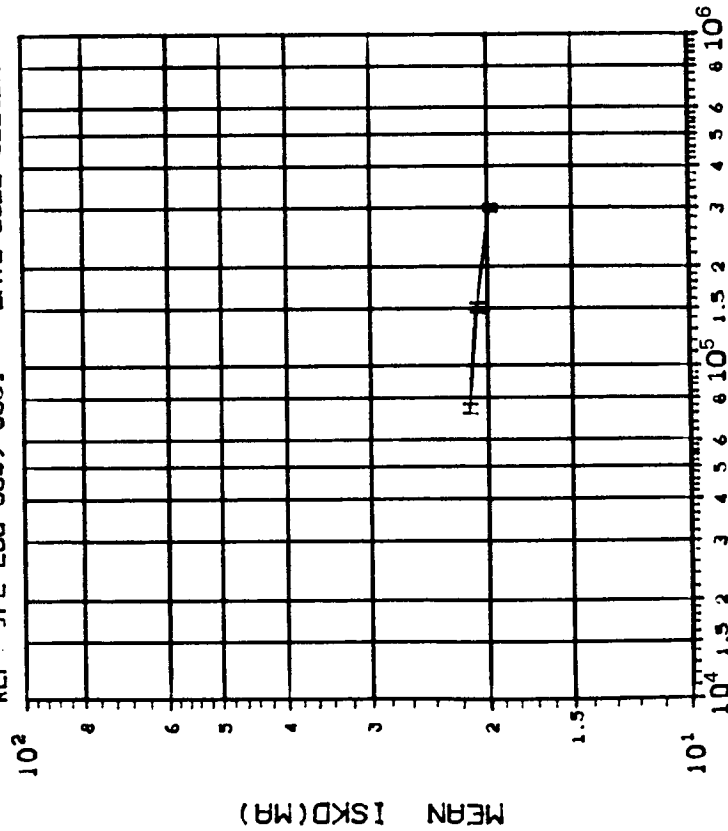


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	150
	300
H	.9631 .9124 .8976

INITIAL MEAN VALUE ISKD(MR) = $2.23 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: QMD 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0849-0851 DATE CODE 8228DM

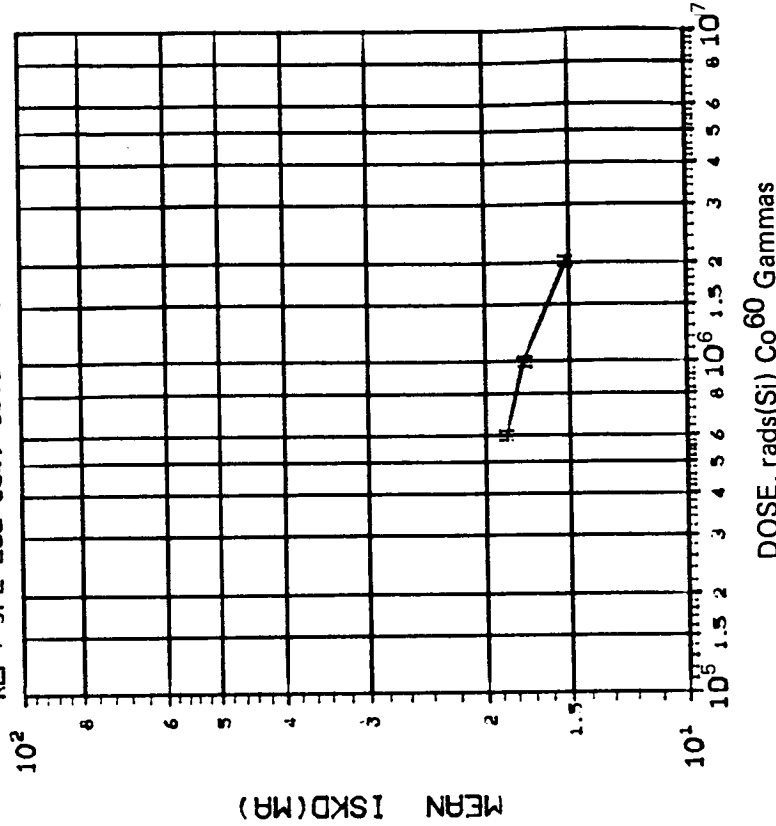


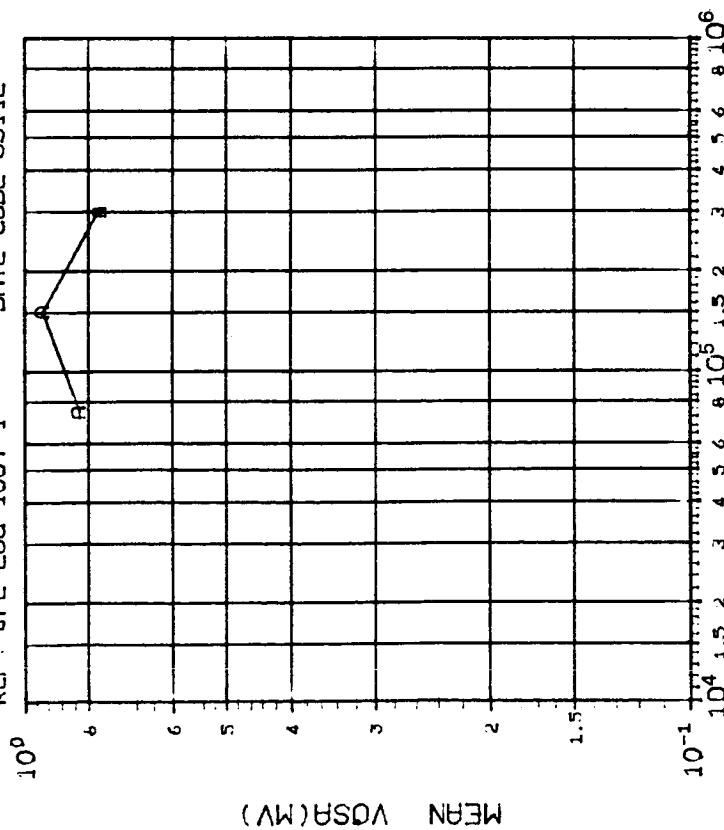
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600
	1000
	2000
H	.8441 .6449 .6899

INITIAL MEAN VALUE ISKD(MR) = $2.23 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-1 DATE CODE 8311E

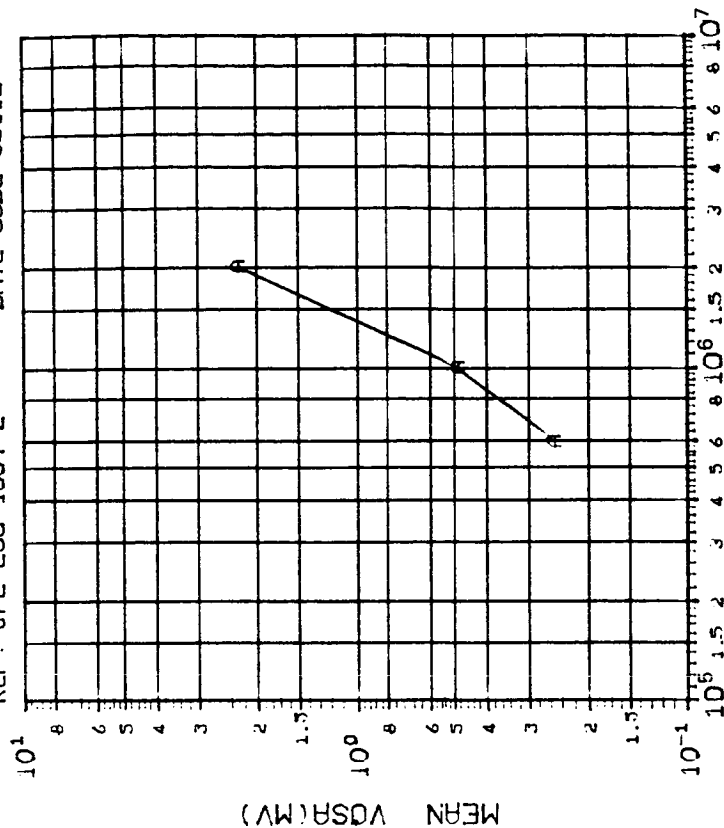


DOSE, rads(Si) 2.5 MeV electrons

(1)VOSA (VO=OV) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	150
	150	300
.2660 .2739 .2945		

INITIAL MEAN VALUE VOSA(MV) = 7.89×10^{-1}



DOSE, rads(Si) 2.5 MeV electrons

(1)VOSA (VO=OV) IN MV: VS DOSE

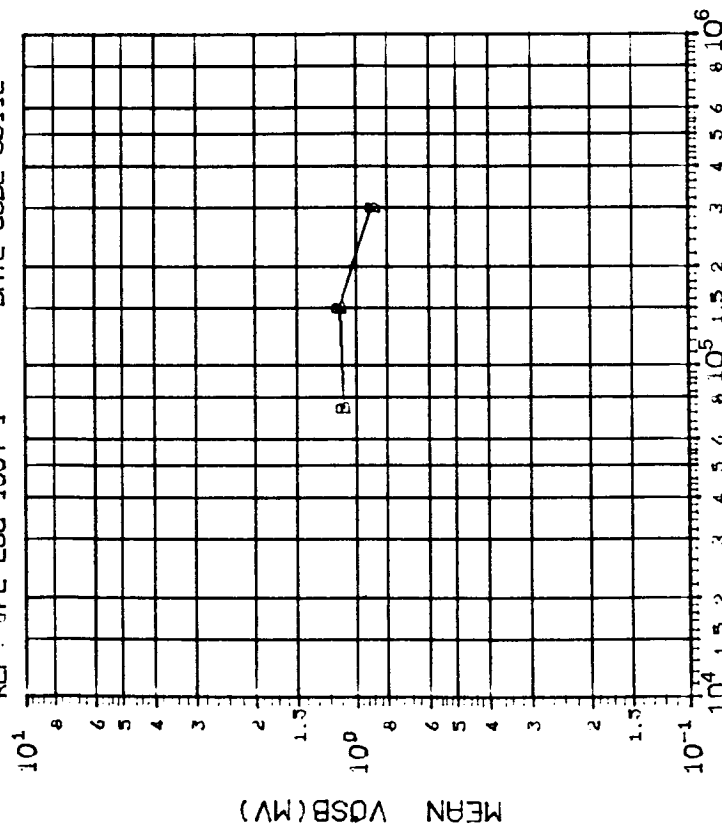
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	600	1000
	1000	2000
.2764 .2978 .4262		

INITIAL MEAN VALUE VOSA(MV) = 7.89×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(2)VOSB (V0=0V) IN MV: VS DOSE

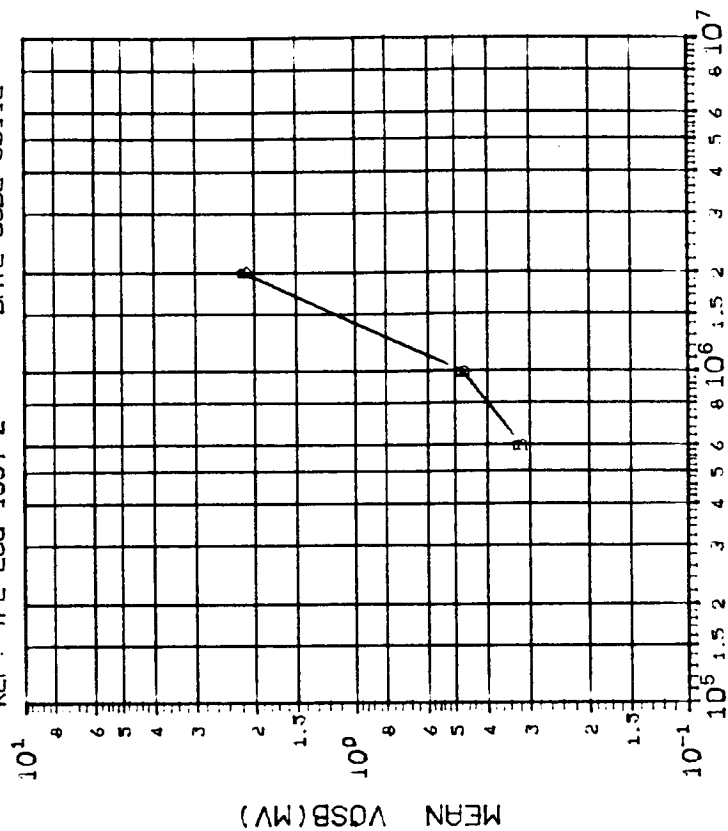
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
.4776 .4810 .4732	

INITIAL MEAN VALUE VOSB(MV) = 1.09X10⁻⁰

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: TPL LOG 1007-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

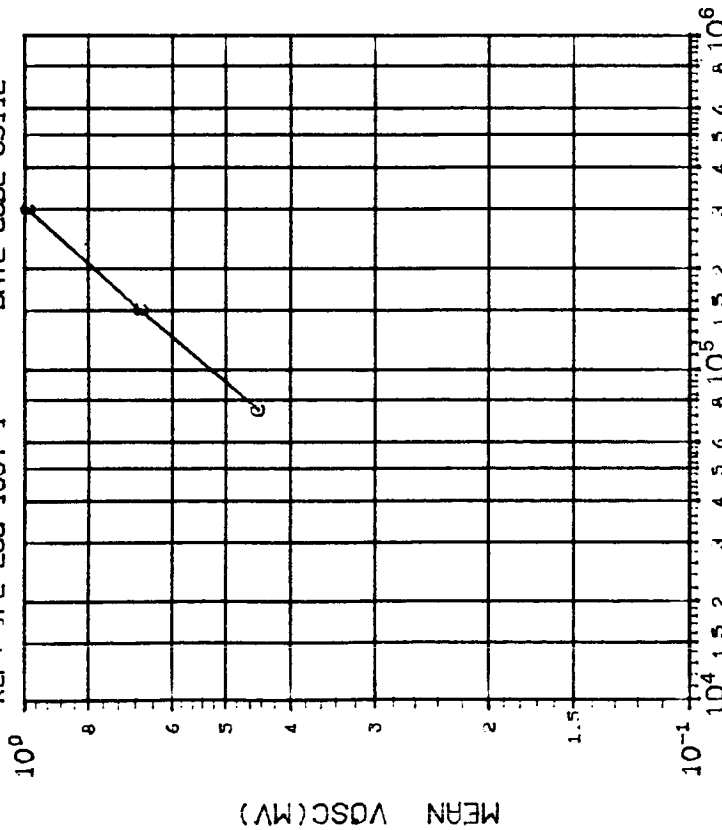
(2)VOSB (V0=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600
	1000
	2000
.4483 .4290 .5779	

INITIAL MEAN VALUE VOSB(MV) = 1.09X10⁻⁰

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DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-22-83
REF: JPL LOG 1007-1 DATE CODE 8311E

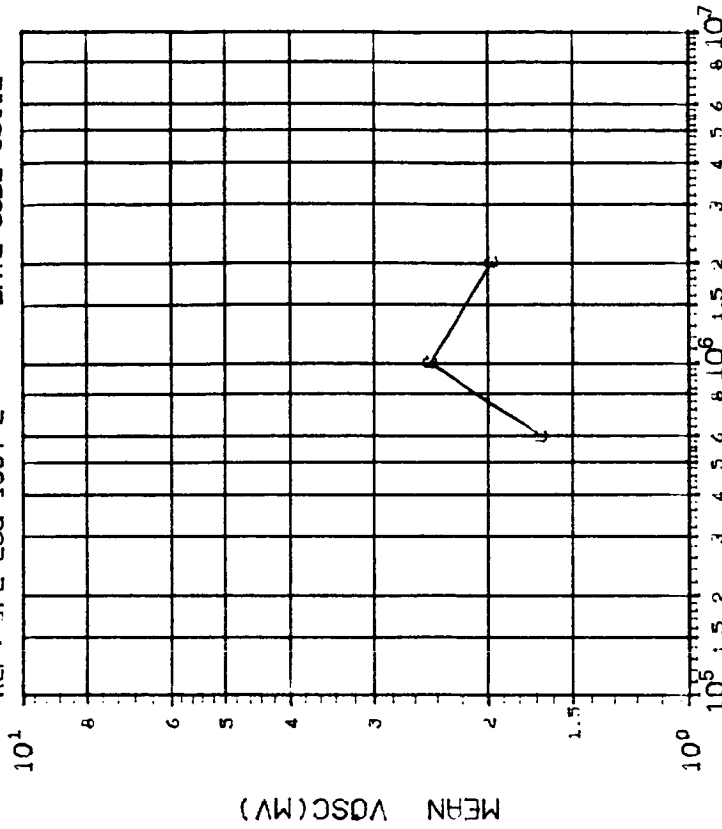


DOSE, rads(Si) 2.5 MeV electrons
(3)VOSC (V0=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
.4293 .4190 .4123	

INITIAL MEAN VALUE VOSC(MV) = 8.56×10^{-2}

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-22-83
REF: JPL LOG 1007-2 DATE CODE 8311E

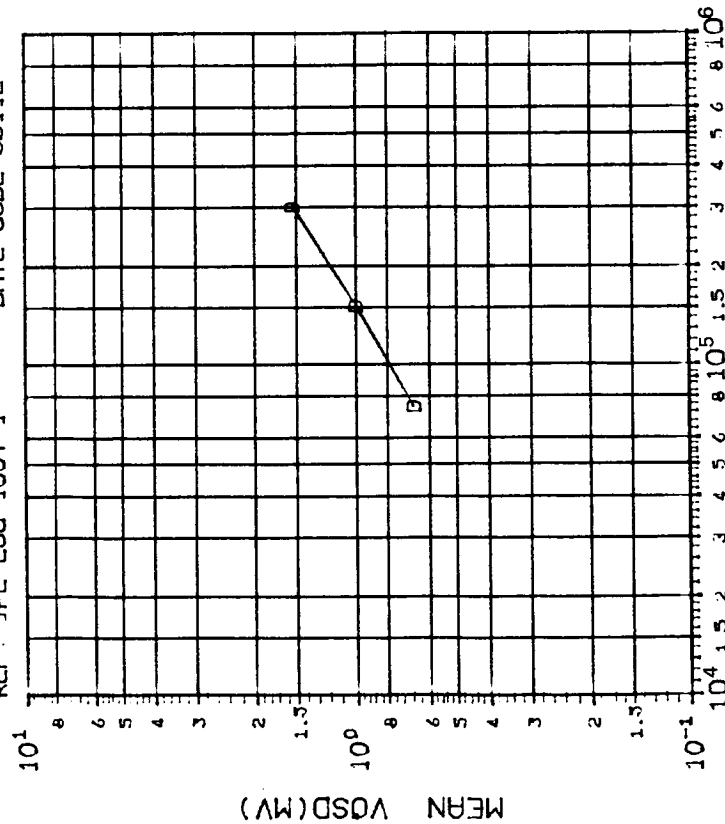


DOSE, rads(Si) 2.5 MeV electrons
(3)VOSC (V0=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600
	1000
	2000
.4721 .5315 1.960	

INITIAL MEAN VALUE VOSC(MV) = 8.56×10^{-2}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E

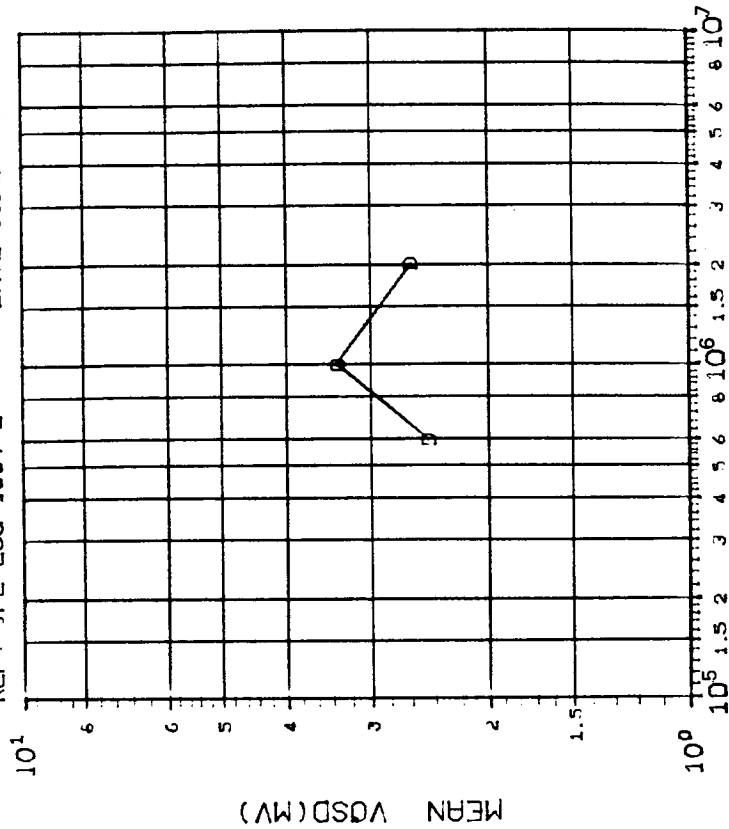


DOSE, rads(Si) 2.5 MeV electrons
 (4) V0SD (V0=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75 150 300	
	.1406 .1538 .1652	

INITIAL MEAN VALUE V0SD(MV) = 2.94×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
 (4) V0SD (V0=0V) IN MV: VS DOSE

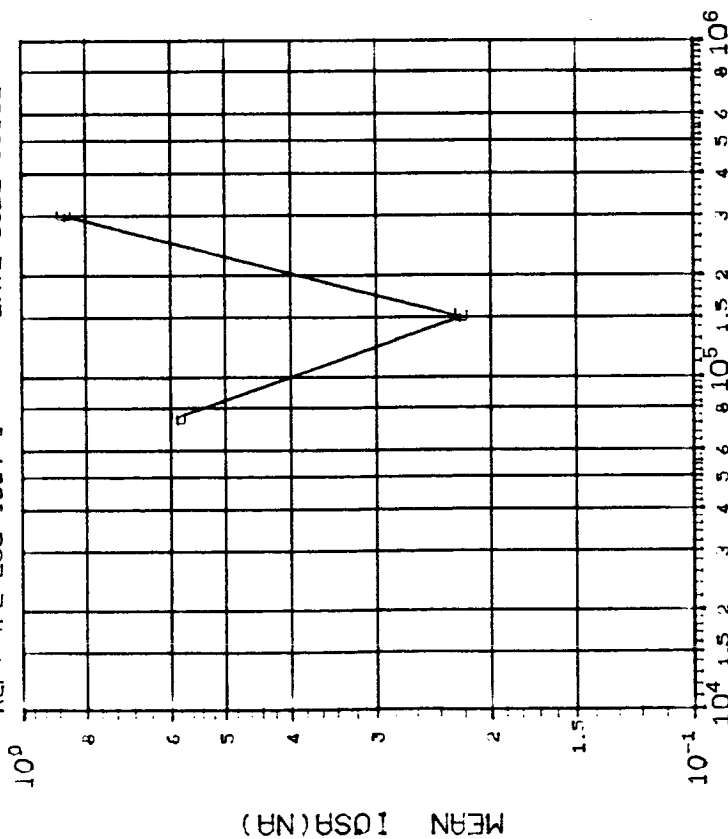
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	600 1000 2000	
	.3268 .2246 2.581	

INITIAL MEAN VALUE V0SD(MV) = 2.94×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: TPL LOG 1007-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
(5)IOSA (VO=0V) IN NA: VS DOSE

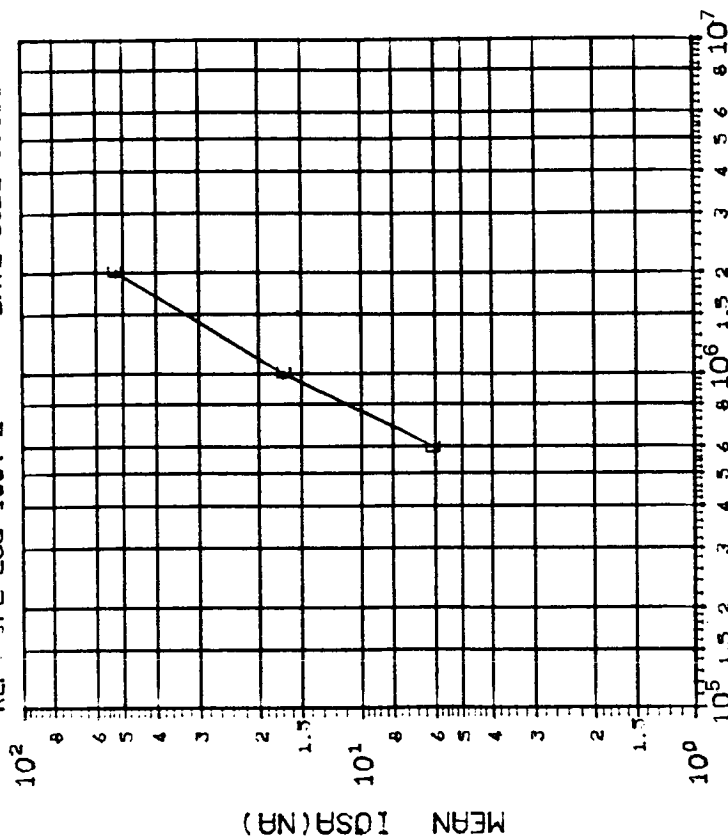
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
E	75	1.570
	150	1.439
E	300	1.757

INITIAL MEAN VALUE IOSA(NA) = 8.92×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-2 DATE CODE 8311E

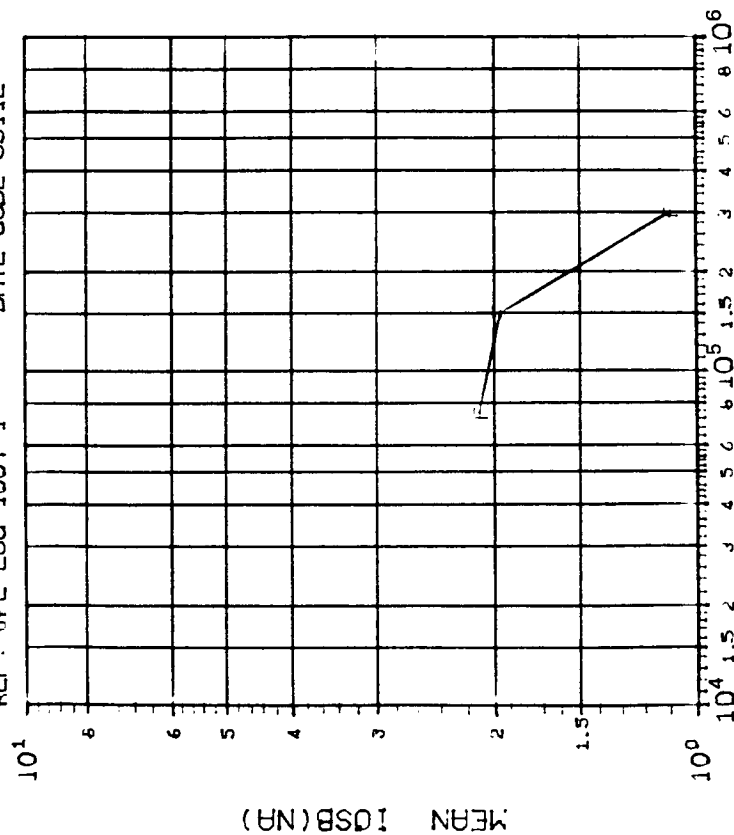


DOSE, rads(Si) 2.5 MeV electrons
(5)IOSA (VO=0V) IN NA: VS DOSE

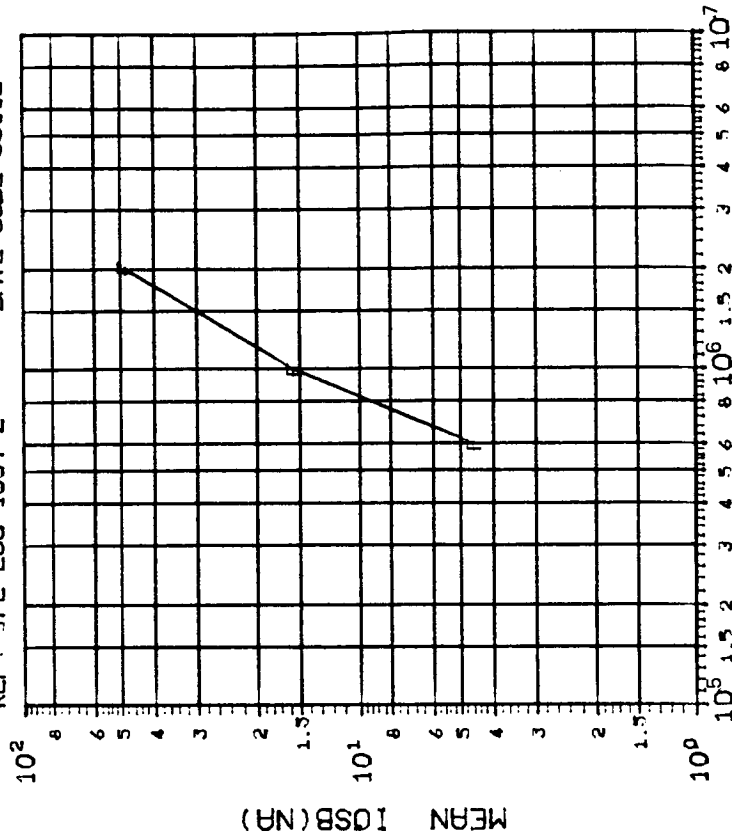
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
E	600	2.741
	1000	5.572
E	2000	7.100

INITIAL MEAN VALUE IOSA(NA) = $6.38 \times 10^{+2}$

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-22-83
REF: JPL LOG 1007--1 DATE CODE 8311E



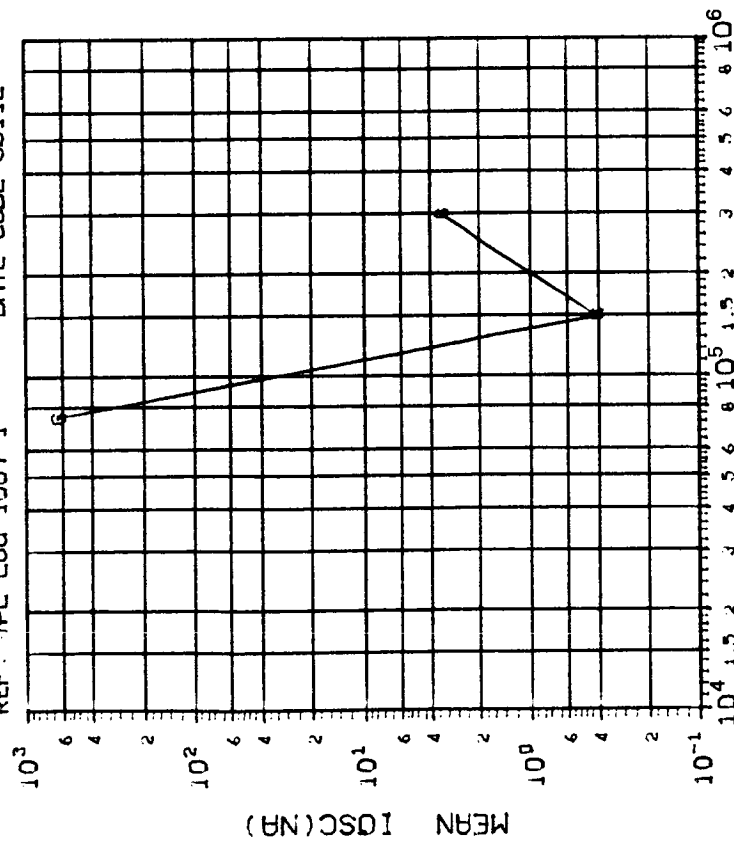
DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-22-83
REF: JPL LOG 1007-2 DATE CODE 8311E



DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD TEST DATE 04-22-83

REF: JPL LOG 1007-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)IOSC (V0=0V) IN NA: VS DOSE

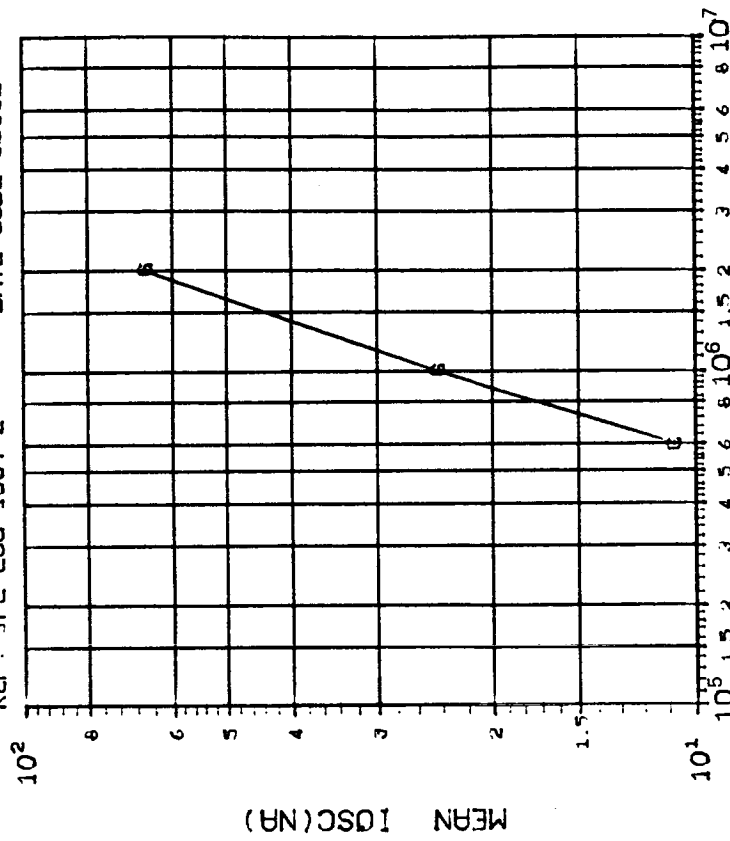
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	1704. 1.327 2.463

INITIAL MEAN VALUE IOSC(NA) = 1.41X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD TEST DATE 04-22-83

REF: JPL LOG 1007-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)IOSC (V0=0V) IN NA: VS DOSE

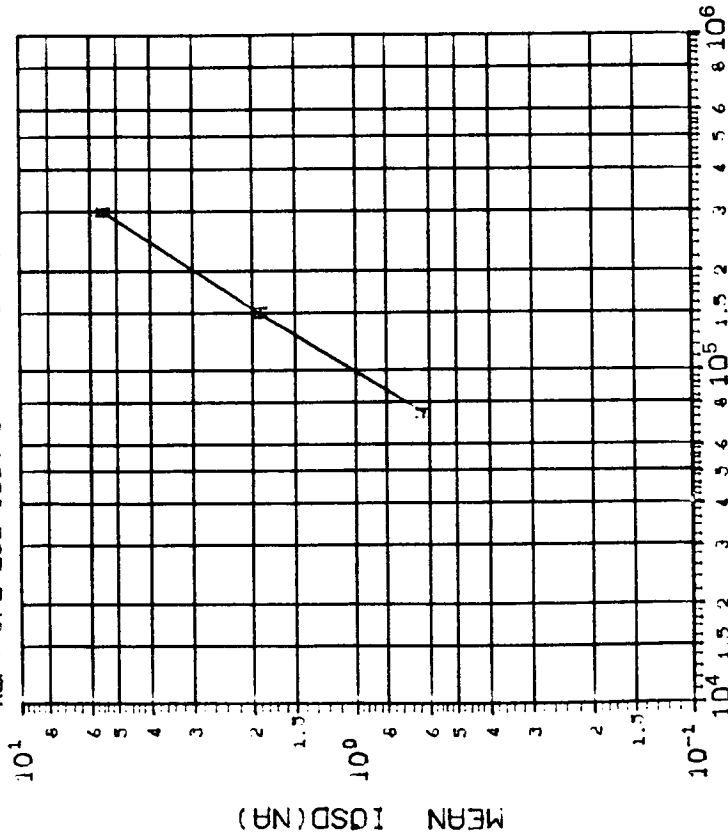
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	4.498 7.575 12.48

INITIAL MEAN VALUE IOSC(NA) = 1.41X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-1 DATE CODE 8311E



DOSE, rad(Si) 2.5 MeV electrons
(8)10SD (V0=0V) IN NA: VS DOSE

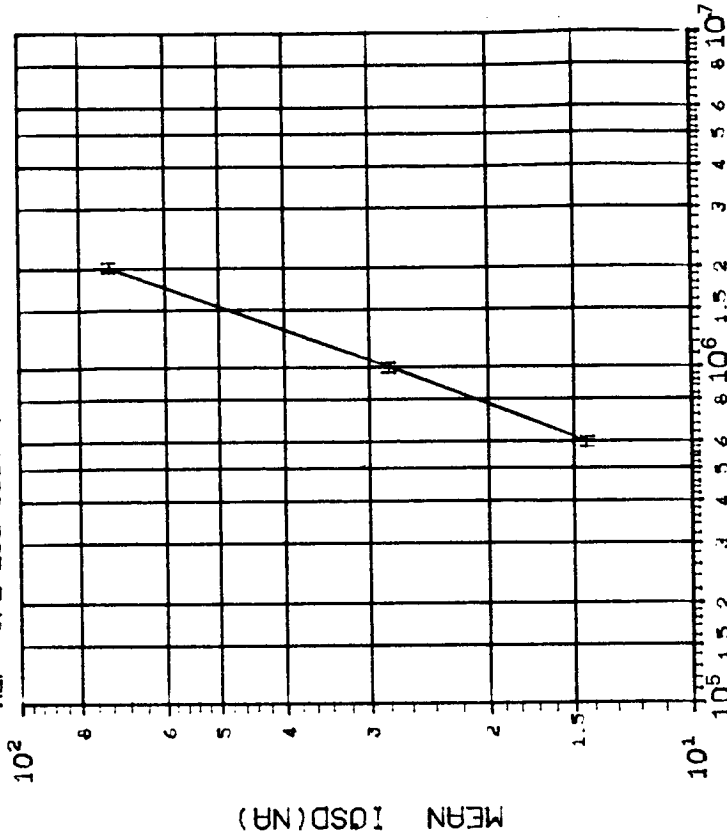
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	150
	300

INITIAL MEAN VALUE 10SD(NA) = 1.38×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-2 DATE CODE 8311E



DOSE, rad(Si) 2.5 MeV electrons
(8)10SD (V0=0V) IN NA: VS DOSE

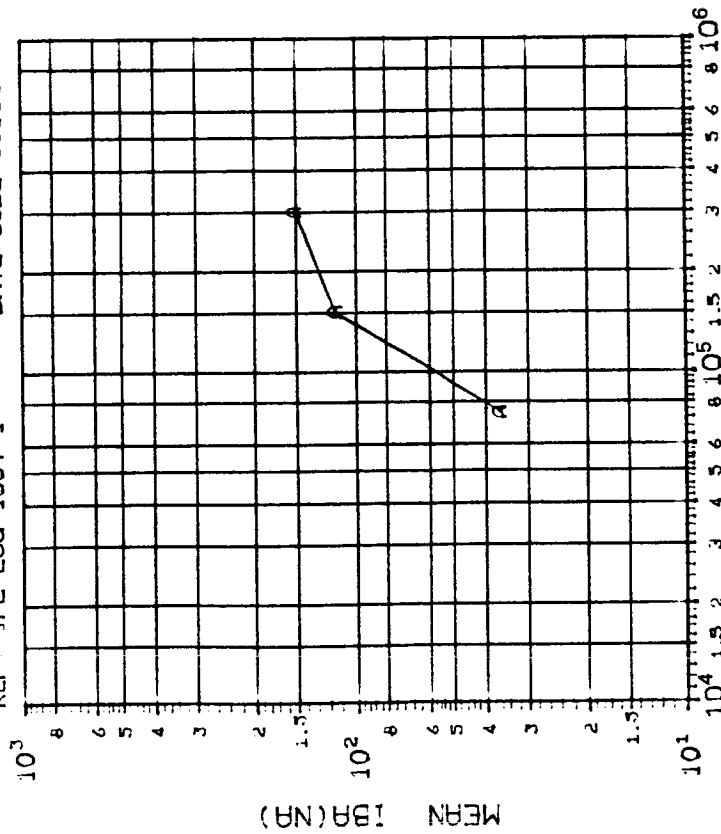
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600
	1000
	2000

INITIAL MEAN VALUE 10SD(NA) = 1.38×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(1)IBA (VO=OV) IN NA: VS DOSE

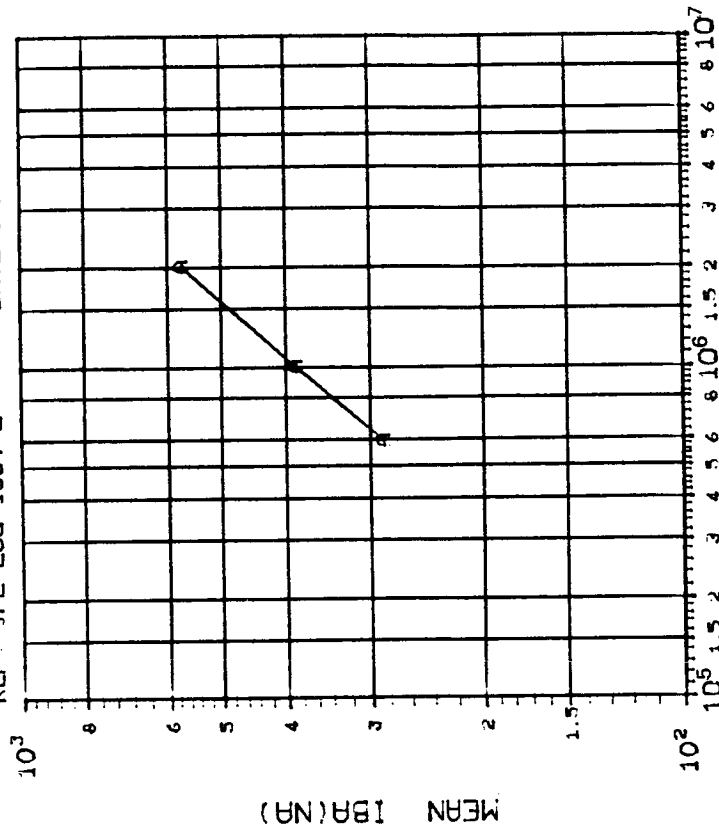
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	150
	26.13	31.97

INITIAL MEAN VALUE IBA(NA) = $3.66 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-2 DATE CODE 8311E



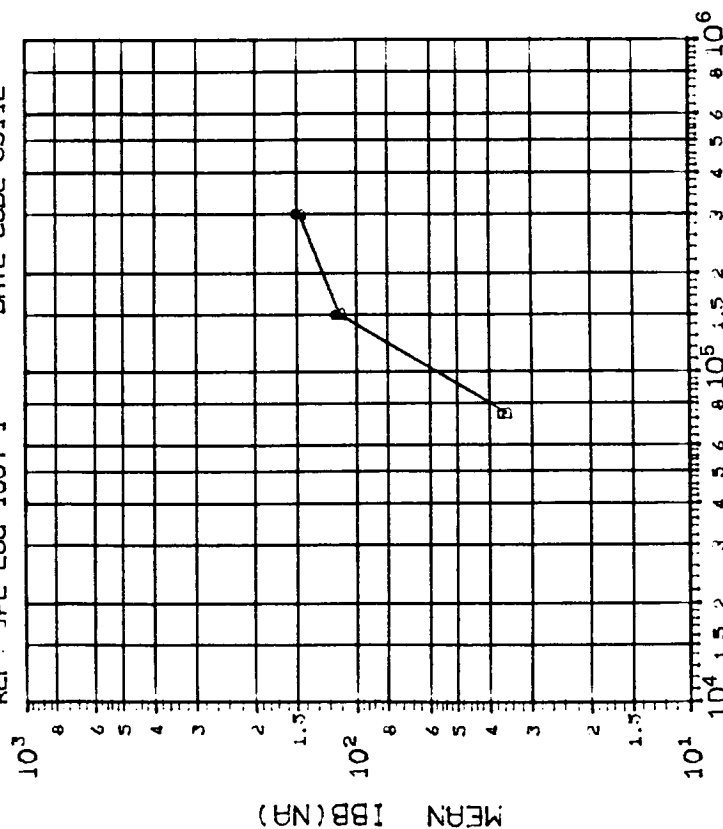
DOSE, rads(Si) 2.5 MeV electrons

(1)IBA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	600	1000
	49.68	58.19

INITIAL MEAN VALUE IBA(NA) = $2.07 \times 10^{+2}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E

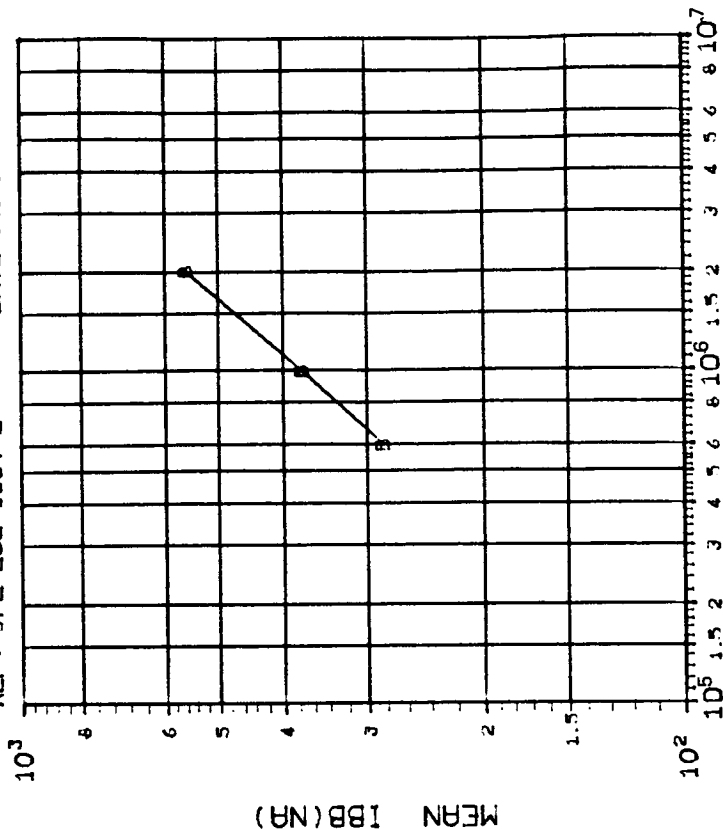


DOSE, rads(Si) 2.5 MeV electrons
 (2)IBB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
B	4.373 26.76 29.31

INITIAL MEAN VALUE IBB(NA) = $3.61 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
 (2)IBB (VO=OV) IN NA: VS DOSE

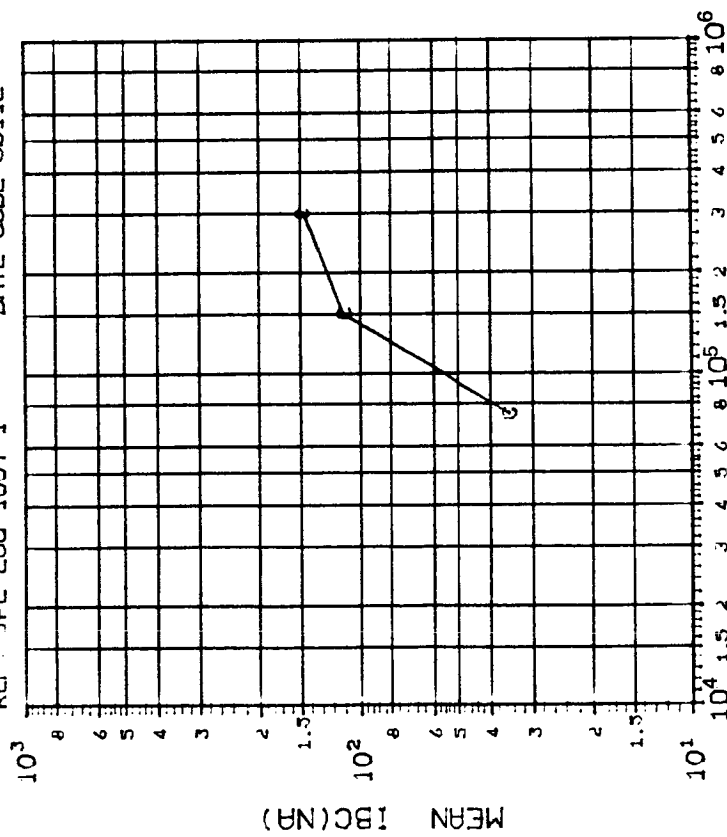
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
B	50.16 62.25 78.61

INITIAL MEAN VALUE IBB(NA) = $2.06 \times 10^{+2}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
(3)IBC (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

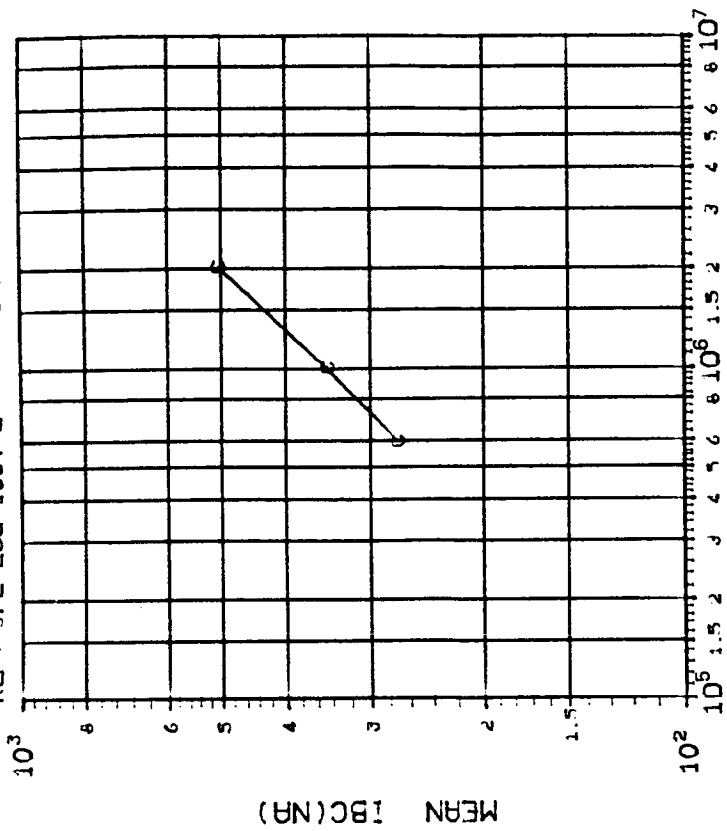
CURVE	DOSE, kilorads(Si)
C	75 150 300
	4.704 28.04 32.64

INITIAL MEAN VALUE IBC(NA) = $3.54 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
(3)IBC (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

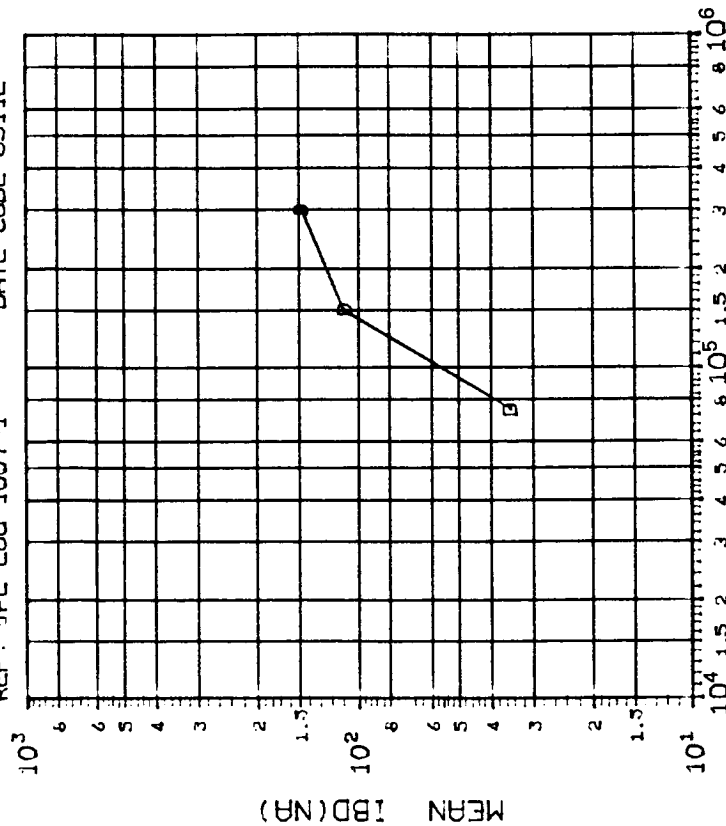
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	42.54 56.16 66.03

INITIAL MEAN VALUE IBC(NA) = $1.95 \times 10^{+2}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(4)IBD (VO=OV) IN NA: VS DOSE

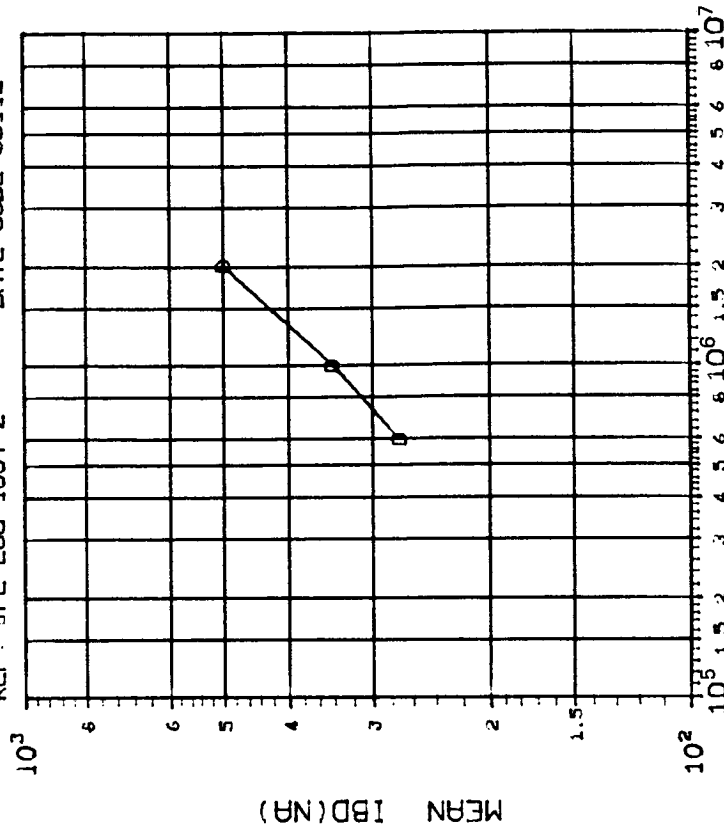
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
D	4.315 27.90 32.35

INITIAL MEAN VALUE IBD(NR) = $3.52 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-2 DATE CODE 8311E



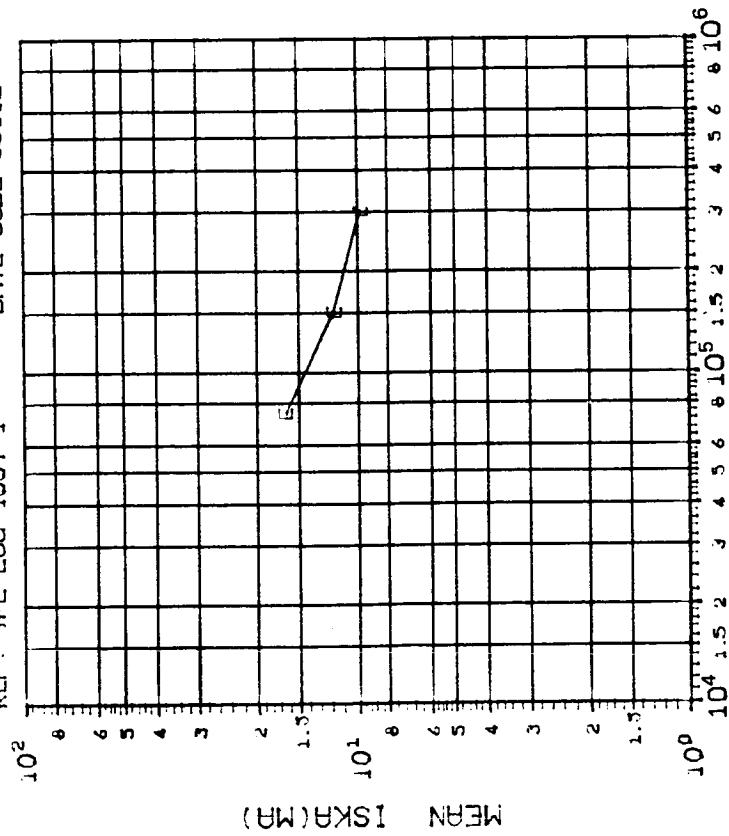
DOSE, rads(Si) 2.5 MeV electrons

(4)IBD (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600
	1000
	2000
D	43.42 47.03 63.90

INITIAL MEAN VALUE IBD(NR) = $2.00 \times 10^{+2}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: TPL LOG 1007-1 DATE CODE 8311E

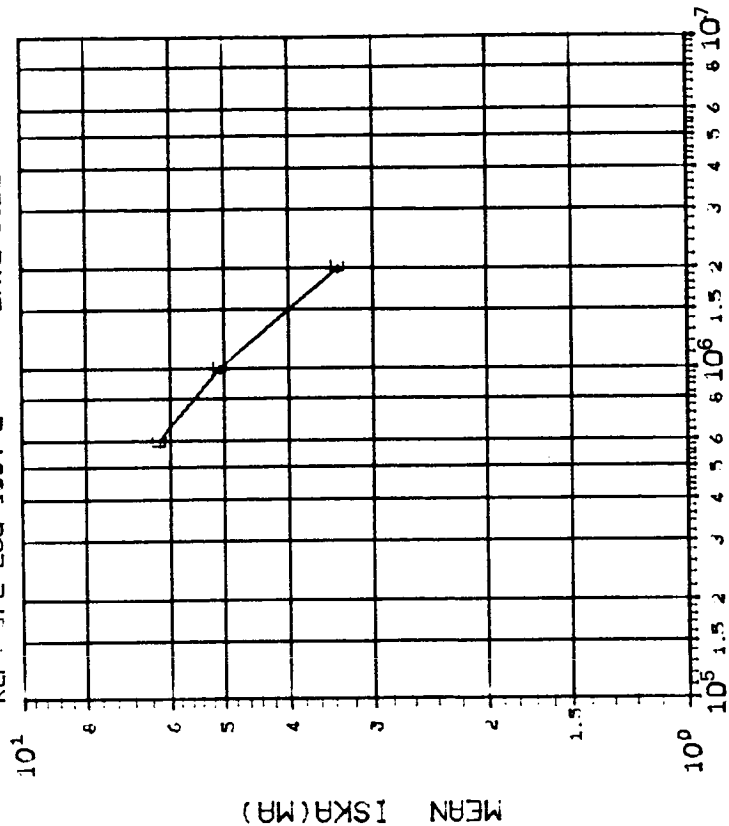


DOSE, rads(Si) 2.5 MeV electrons
 (5) ISKA (V0=-13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	1.158 1.016 1.014

INITIAL MEAN VALUE ISKA(MA) = $1.64 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E



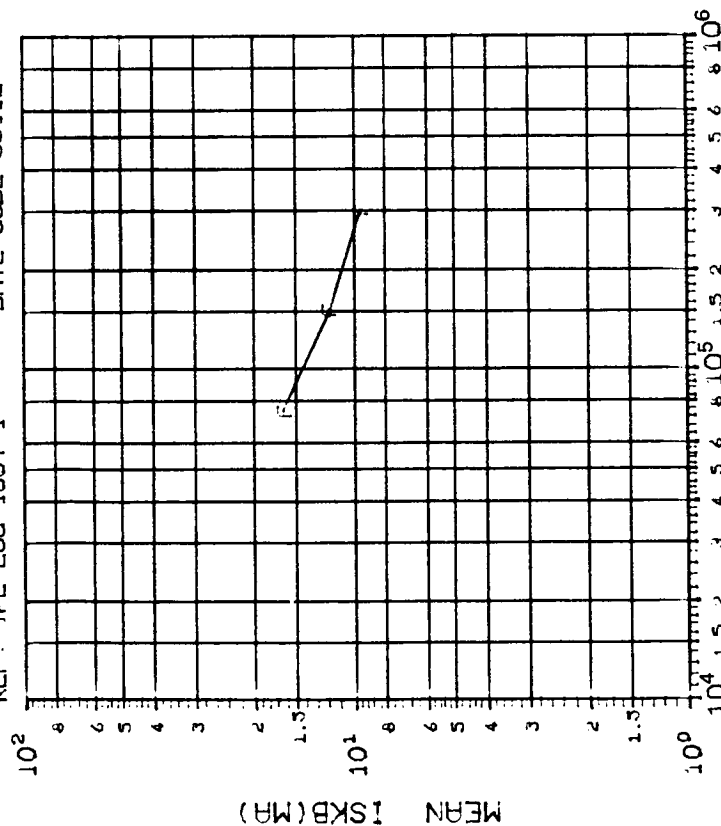
DOSE, rads(Si) 2.5 MeV electrons
 (5) ISKA (V0=-13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	.8654 .7415 .5361

INITIAL MEAN VALUE ISKA(MA) = $7.92 \times 10^{+0}$

C-2

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E

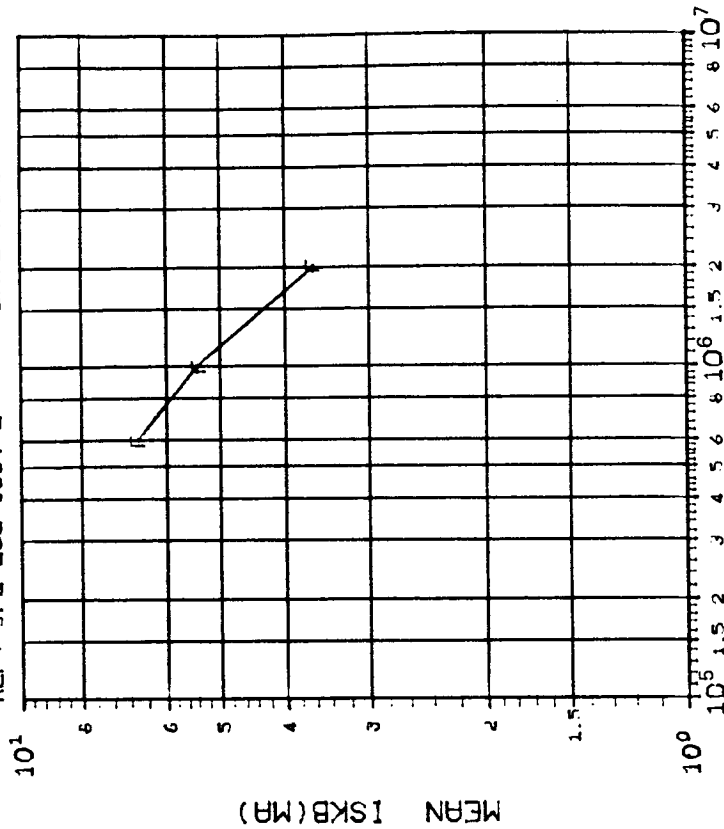


DOSE, rads(Si) 2.5 MeV electrons
 (6)ISKB (V0=-13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75
	150
	300
1.227 1.026 1.596	

INITIAL MEAN VALUE ISKB(MA) = 1.63×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
 (6)ISKB (V0=-13.5V) IN MA: VS DOSE

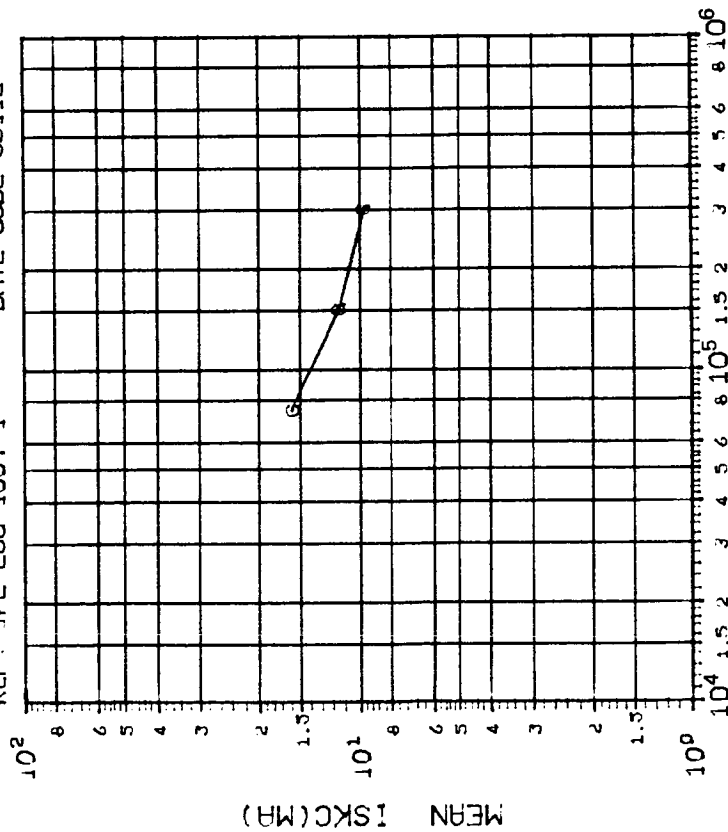
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600
	1000
	2000
.6359 .7153 .5330	

INITIAL MEAN VALUE ISKB(MA) = 8.31×10^{-2}

DEVICE TYPE: LM139 QUAD COMPARTOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)ISKC (V0=-13.5V) IN MA: VS DOSE

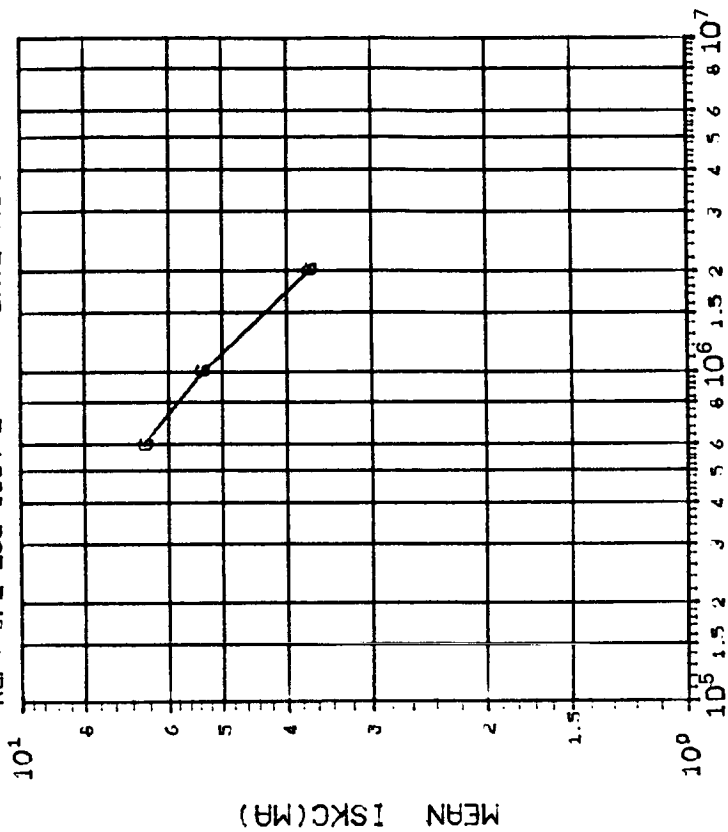
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
G	1.015	.9289
	300	.9064

INITIAL MEAN VALUE ISKC(MA) = $1.59 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARTOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1007-2 DATE CODE 8311E



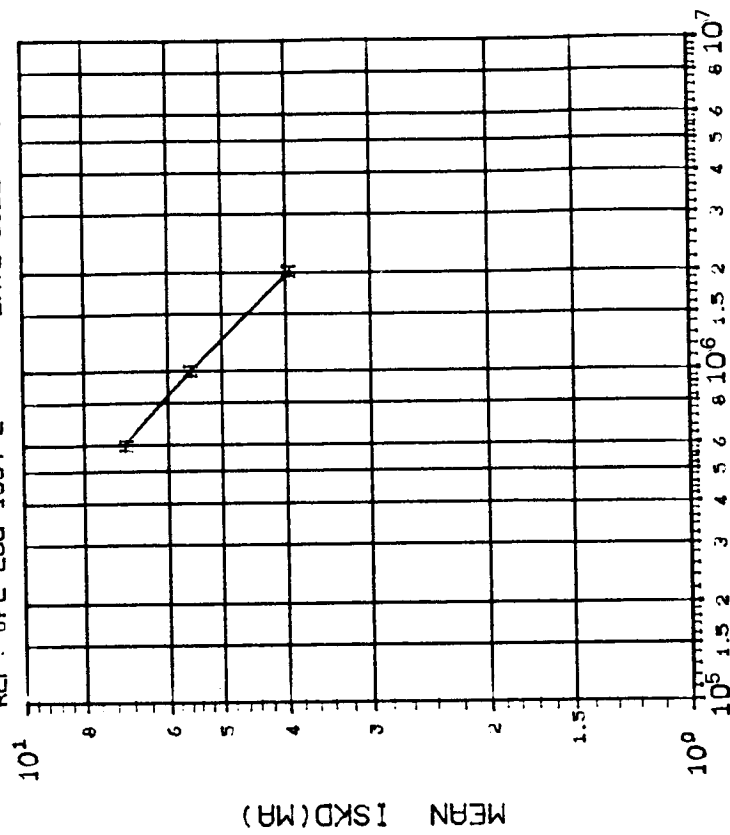
DOSE, rads(Si) 2.5 MeV electrons

(7)ISKC (V0=-13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000
G	.7348	.6494
	2000	.5111

INITIAL MEAN VALUE ISKC(MA) = $8.08 \times 10^{+0}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-2 DATE CODE 8311E

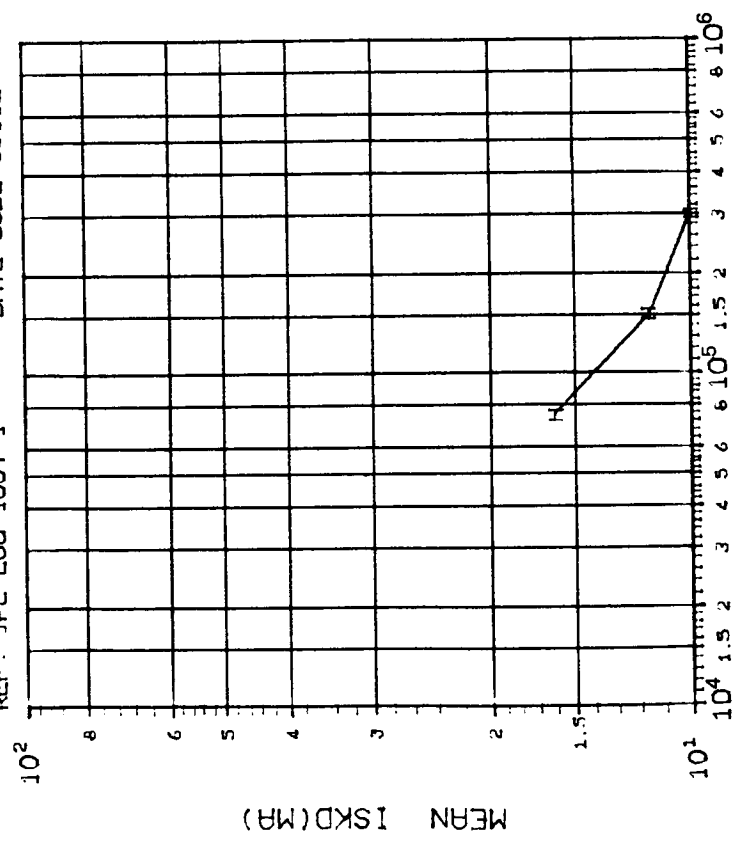


DOSE, rads(Si) 2.5 MeV electrons
 (8)ISKD (V0E--13.5V) IN MR: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600
	1000
	2000
.6664 .6309 .4882	

INITIAL MEAN VALUE ISKD(MR) = 8.44X10⁰

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1007-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
 (8)ISKD (V0E--13.5V) IN MR: VS DOSE

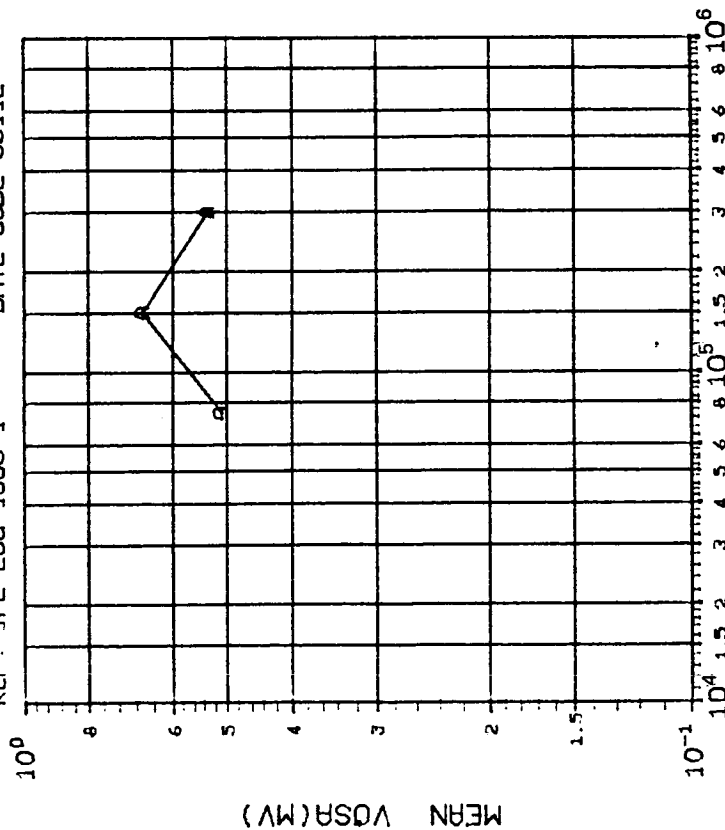
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	150
	300
1.108 .9276 .6946	

INITIAL MEAN VALUE ISKD(MR) = 1.61X10¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



(1)VOSA (V0=0V) IN MV: VS DOSE

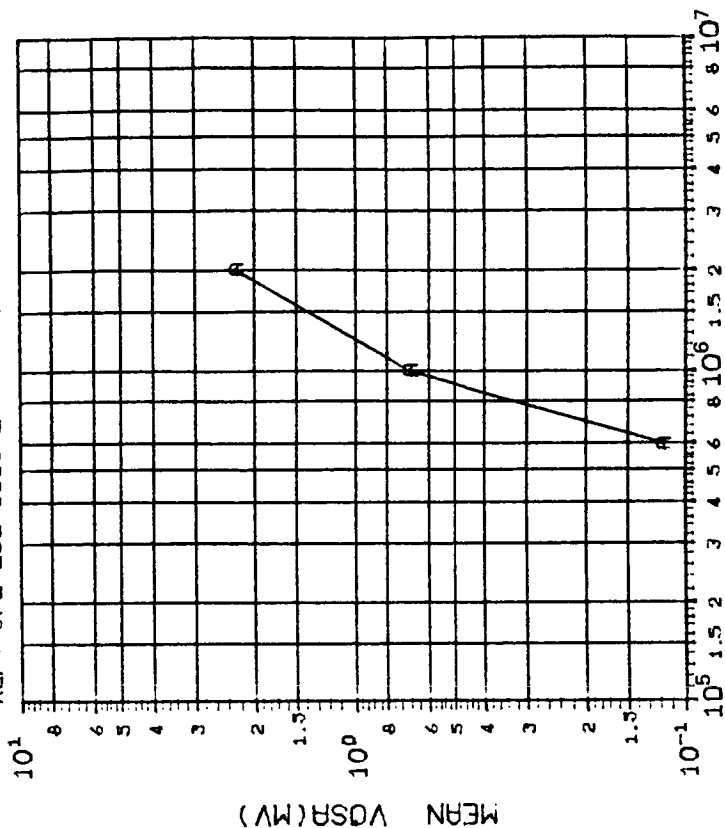
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.4712 .5313 .5442

INITIAL MEAN VALUE VOSA(MV) = 4.56×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



(1)VOSA (V0=0V) IN MV: VS DOSE

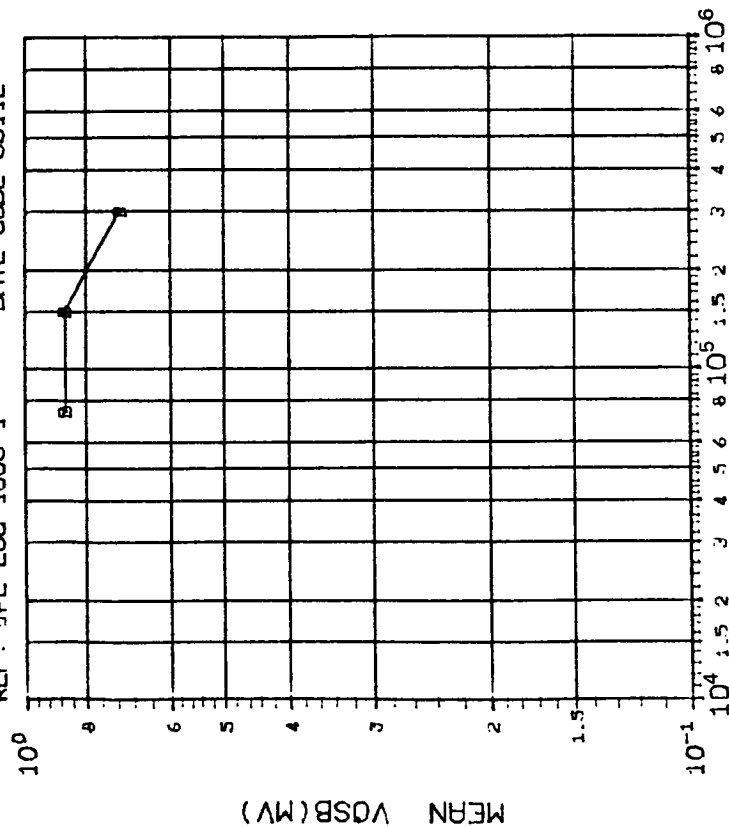
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.6336 .6993 .7078

INITIAL MEAN VALUE VOSA(MV) = 4.56×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(2)VOSB (VO=OV) IN MV: VS DOSE

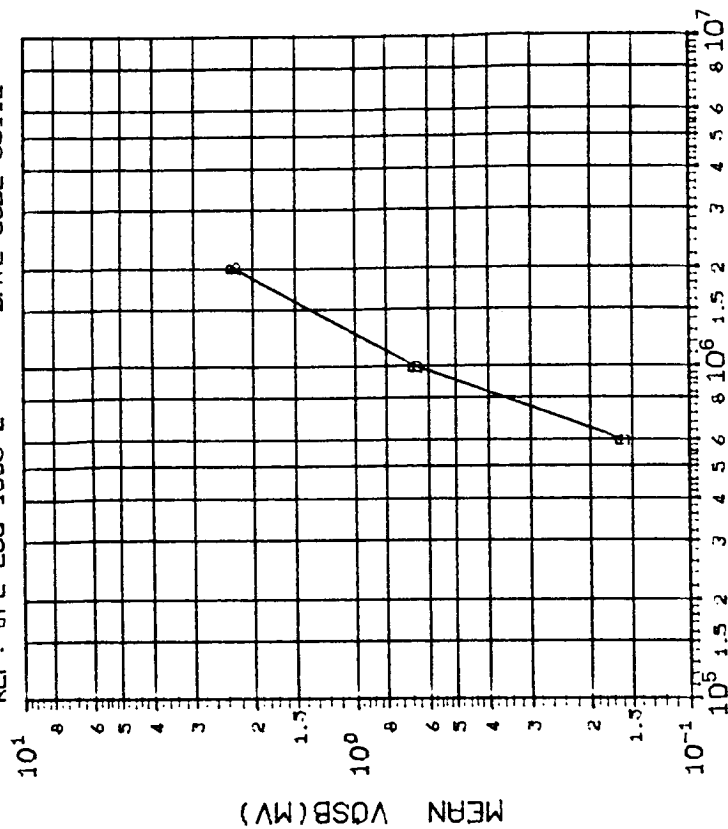
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
B	.4474	.4183
	300	.3984

INITIAL MEAN VALUE VOSB(MV) = 8.56×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(2)VOSB (VO=OV) IN MV: VS DOSE

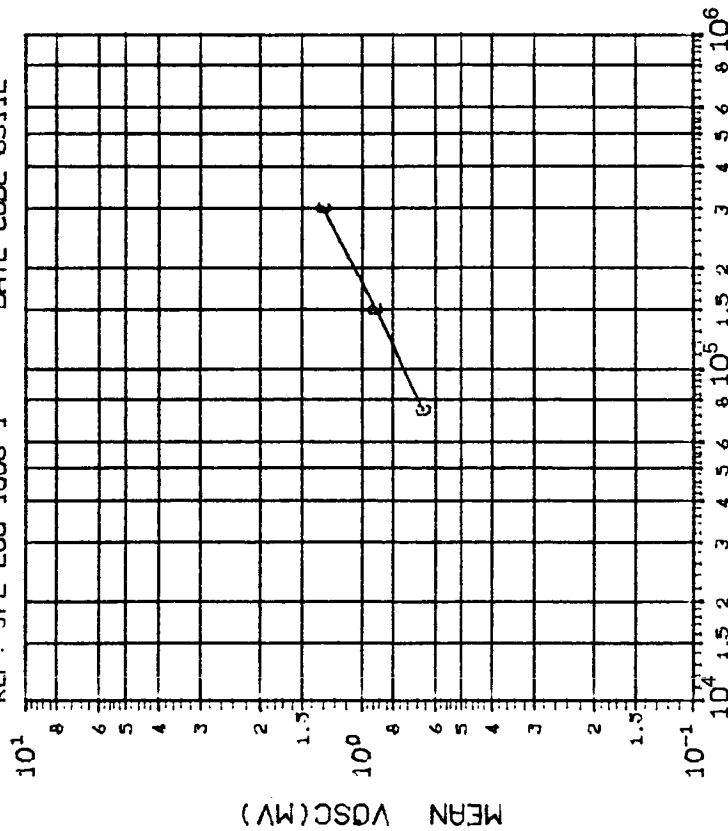
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000
B	.3753	.3763
	2000	.3300

INITIAL MEAN VALUE VOSB(MV) = 8.56×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(3)VOSC (VO=OV) IN MV: VS DOSE

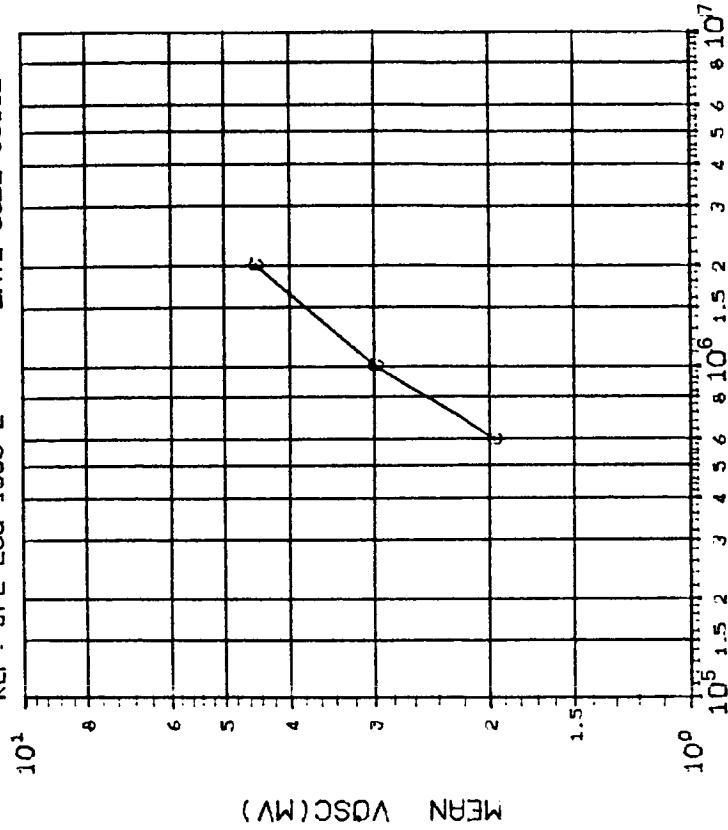
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
.3158 .3362 .3735	

INITIAL MEAN VALUE VOSC(MV) = 2.83×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(3)VOSC (VO=OV) IN MV: VS DOSE

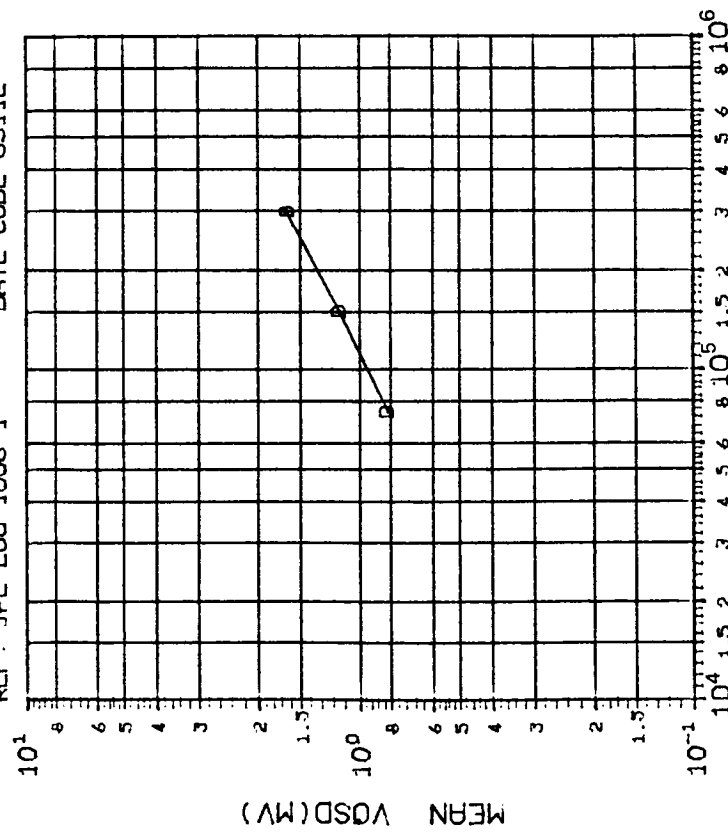
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600
	1000
	2000
.3916 .4697 .4843	

INITIAL MEAN VALUE VOSC(MV) = 2.83×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(4) VOSD (VO=0V) IN MV: VS DOSE

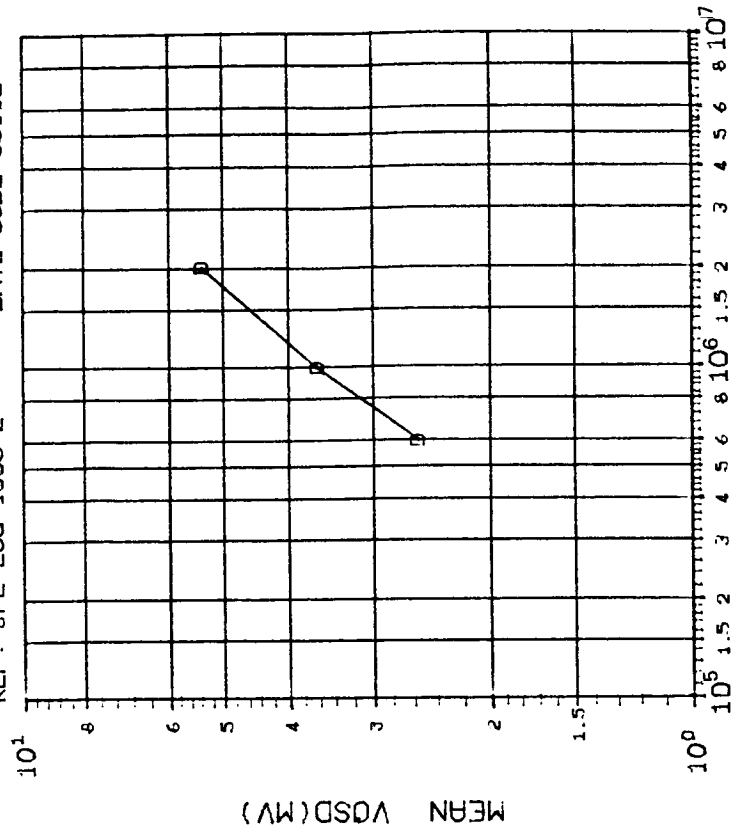
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
	.4786 .5391 .5327

INITIAL MEAN VALUE VOSD(MV) = 4.27×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(4) VOSD (VO=0V) IN MV: VS DOSE

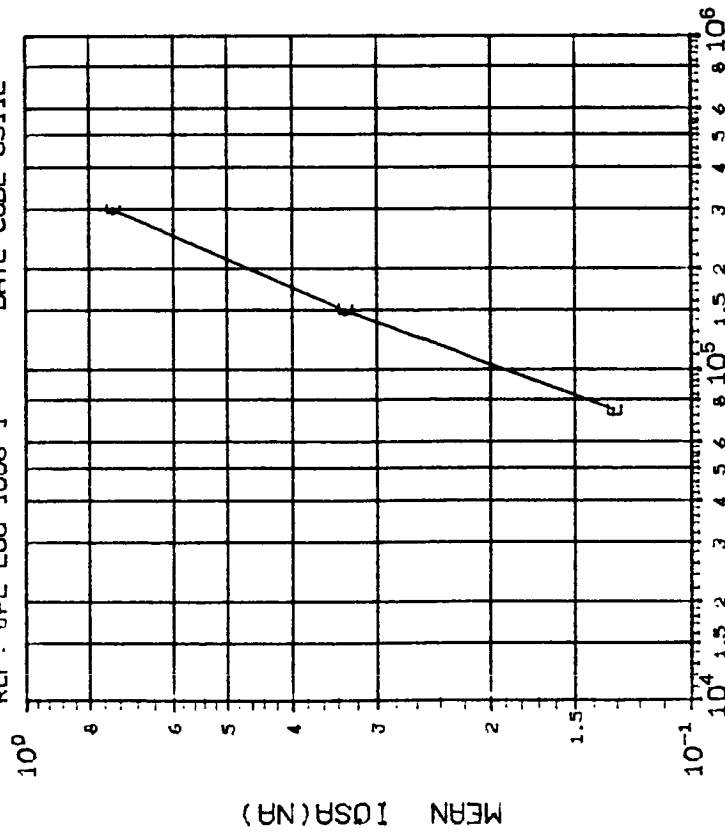
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600
	1000
	2000
	.5723 .6543 .7073

INITIAL MEAN VALUE VOSD(MV) = 4.27×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(5)IOSA (VO=OV) IN NA: VS DOSE

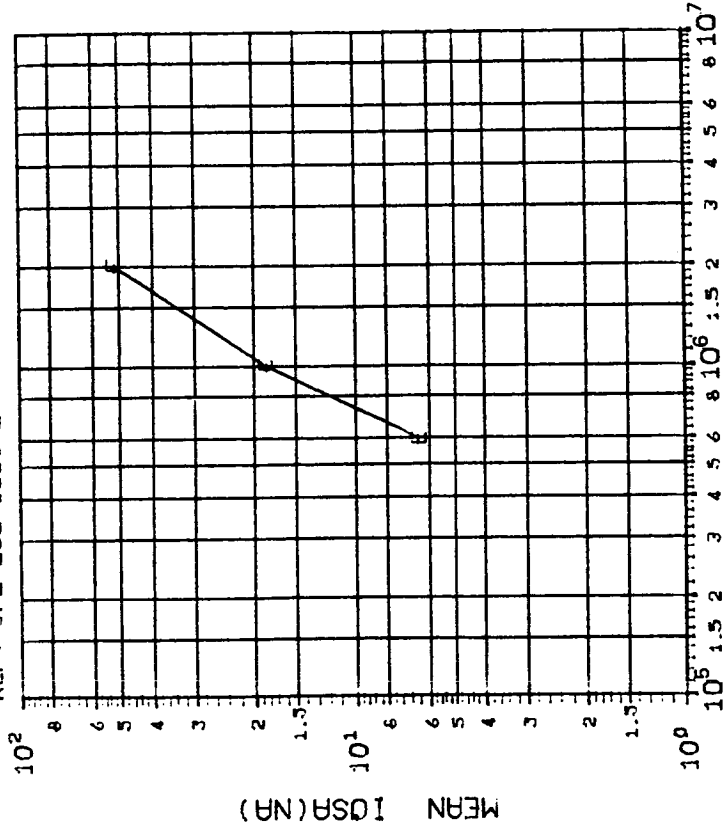
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75
	150
	300
1.044 1.392 2.295	

INITIAL MEAN VALUE IOSA(NA) = 7.50×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(5)IOSA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600
	1000
	2000
2.901 5.988 9.000	

INITIAL MEAN VALUE IOSA(NA) = 7.50×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E

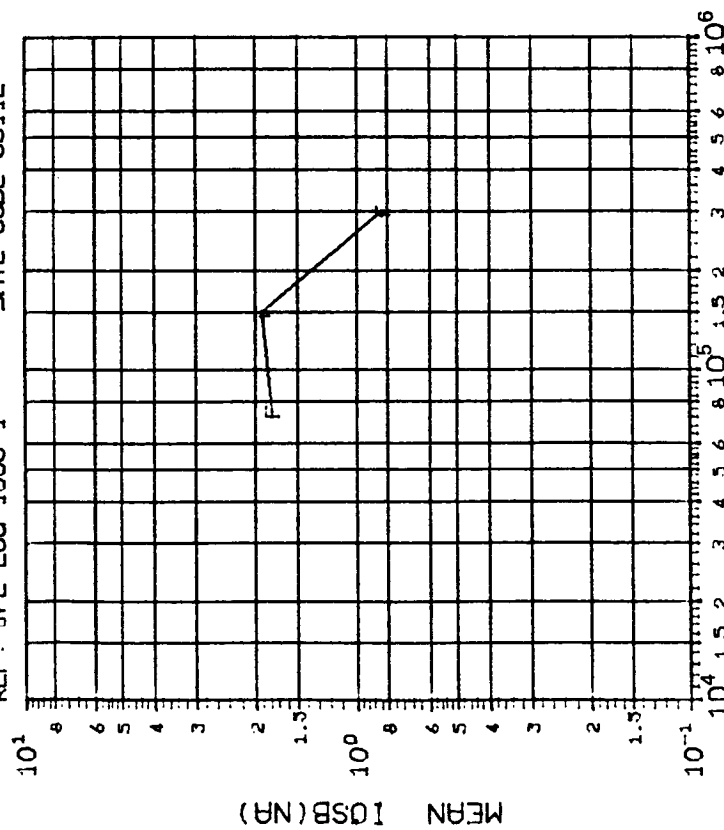


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	.7355 1.312 1.957

INITIAL MEAN VALUE 10SB(NA) = 1.53×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E

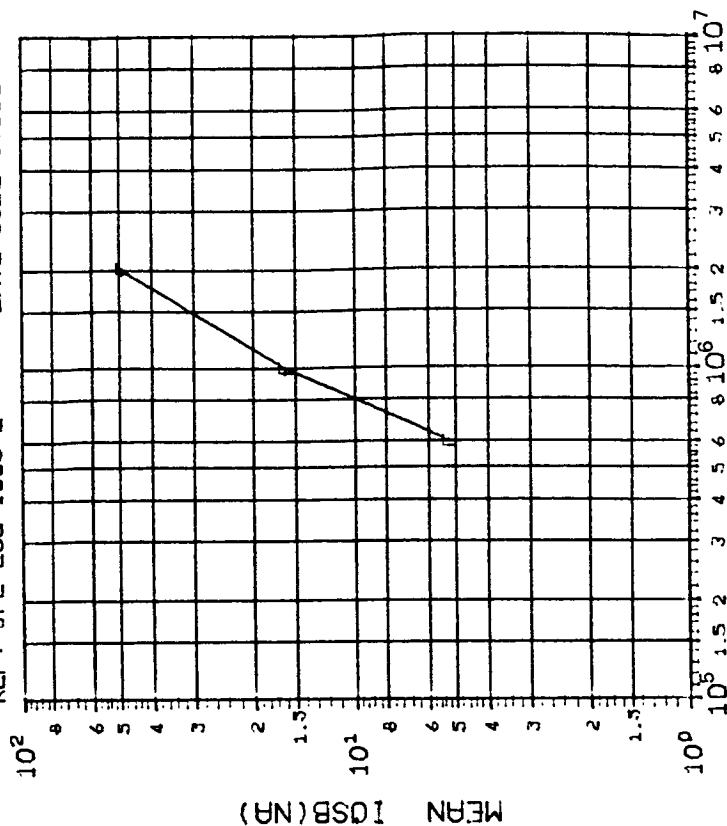


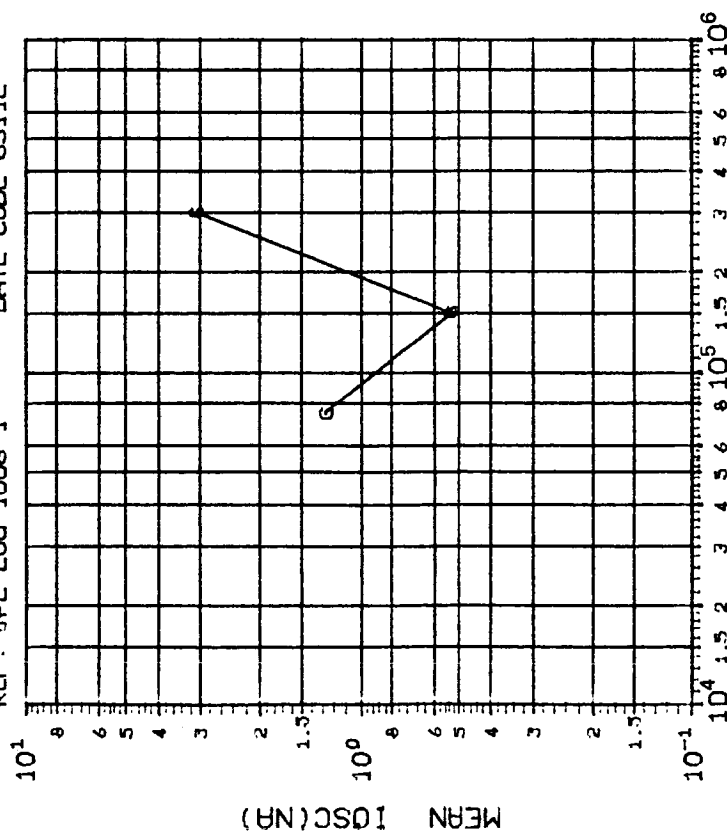
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	2.606 4.791 8.377

INITIAL MEAN VALUE 10SB(NA) = 1.53×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)IOSC (VO=OV) IN NR: VS DOSE

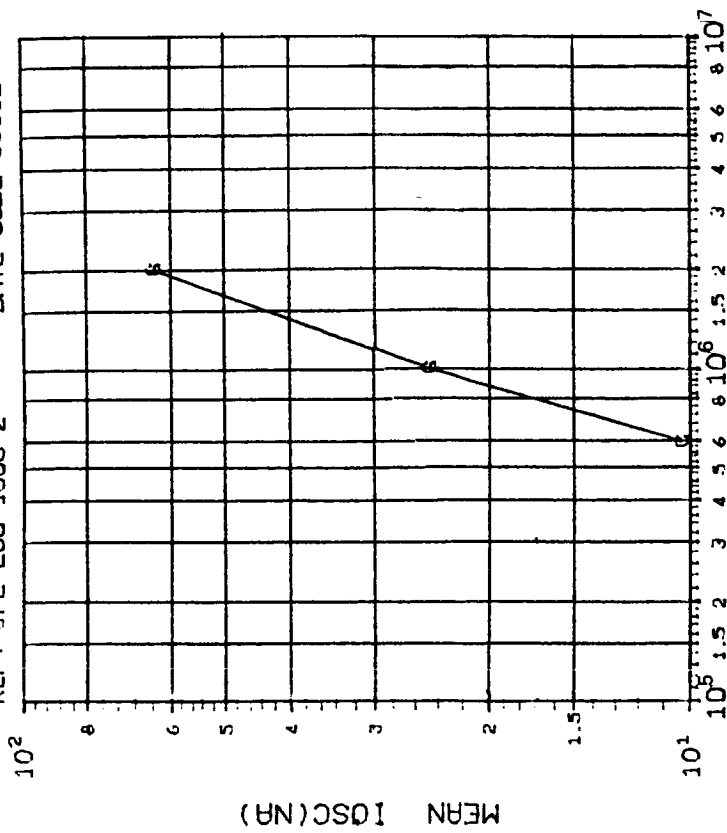
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	.5277 1.703 2.279

INITIAL MEAN VALUE IOSC(NR) = 1.57×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)IOSC (VO=OV) IN NR: VS DOSE

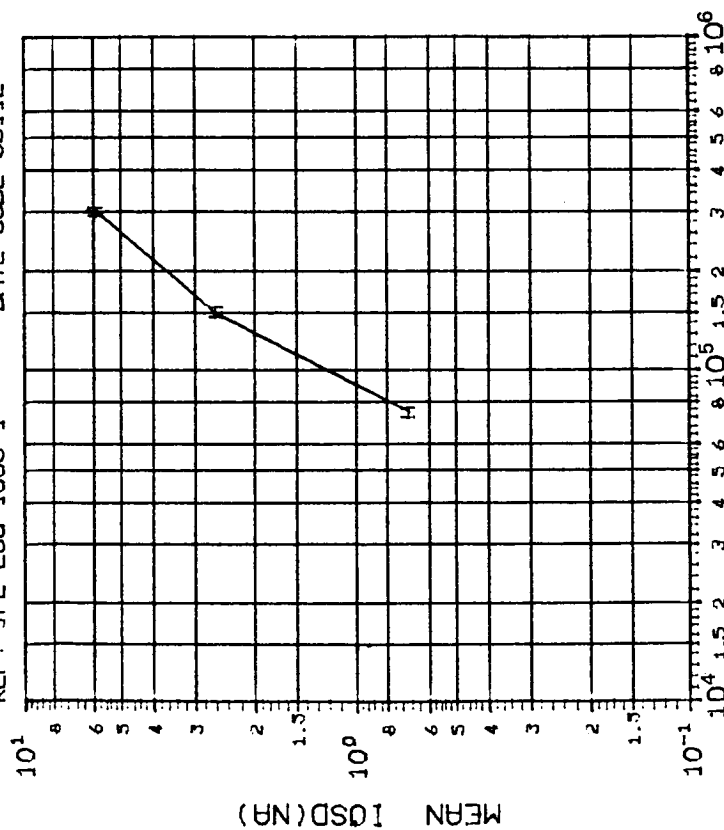
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	4.132 6.571 11.91

INITIAL MEAN VALUE IOSC(NR) = 1.57×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(8) IQSD (V_O=0V) IN NA: VS DOSE

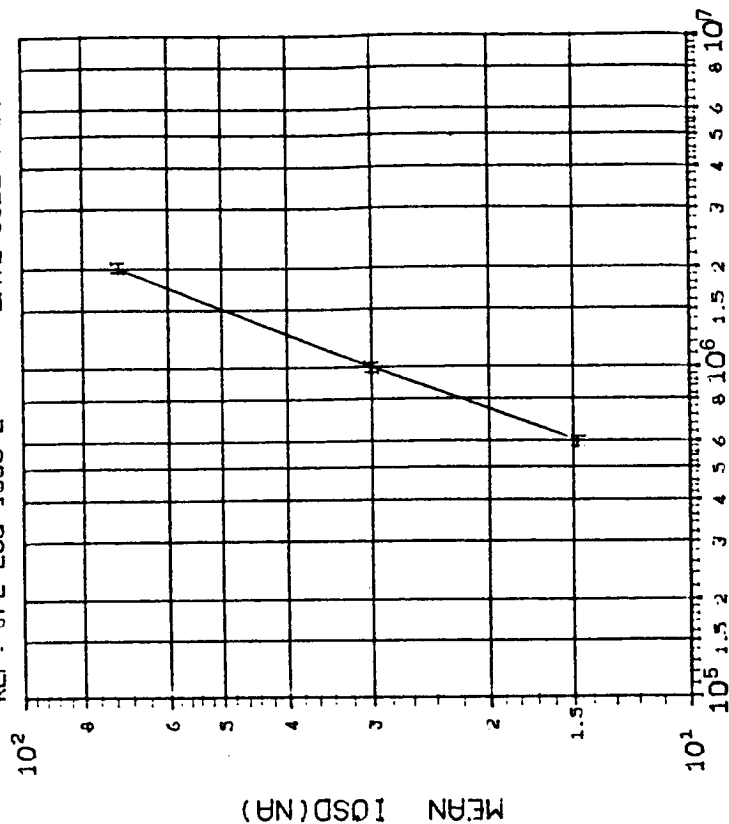
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	.6788 1.240 2.007

INITIAL MEAN VALUE IQSD(NA) = 1.03×10^{-0}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(8) IQSD (V_O=0V) IN NA: VS DOSE

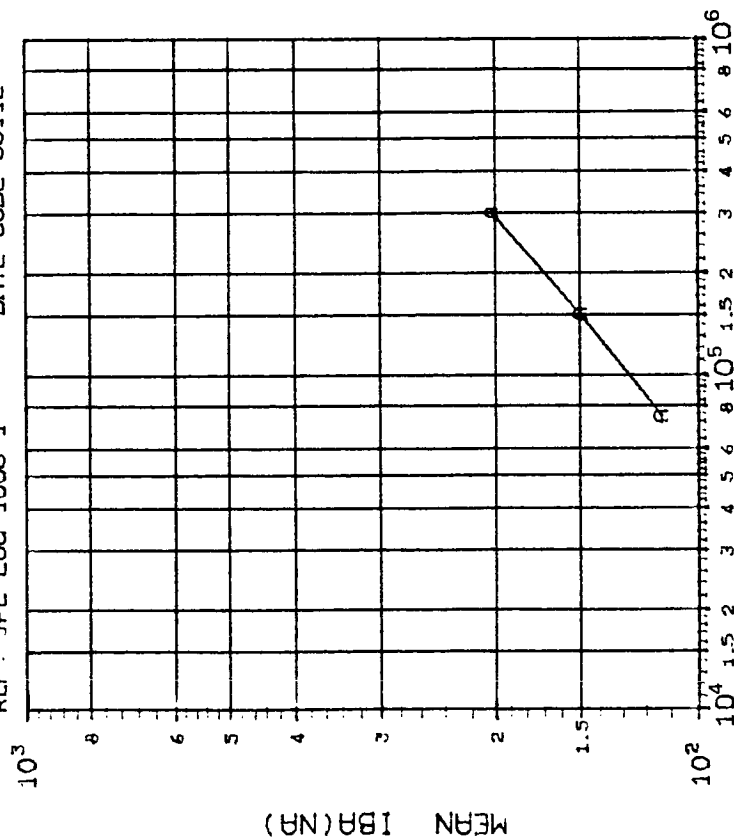
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	4.394 7.194 11.28

INITIAL MEAN VALUE IQSD(NA) = 1.03×10^{-0}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(1)IBA (V0=0V) IN NA: VS DOSE

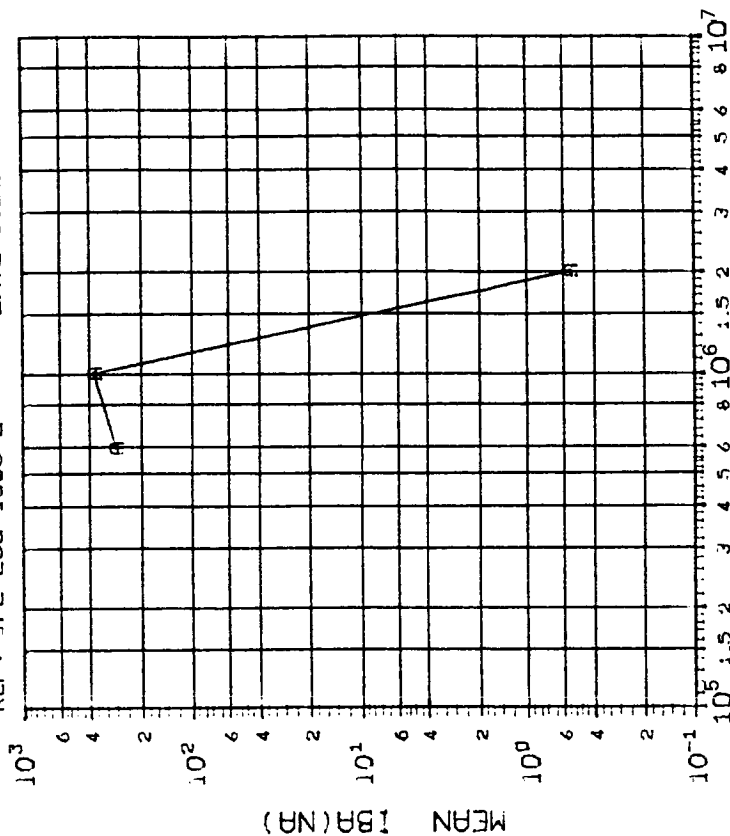
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
12.36 14.59 20.08	

INITIAL MEAN VALUE IBA(NA) = $3.61 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(1)IBA (V0=0V) IN NA: VS DOSE

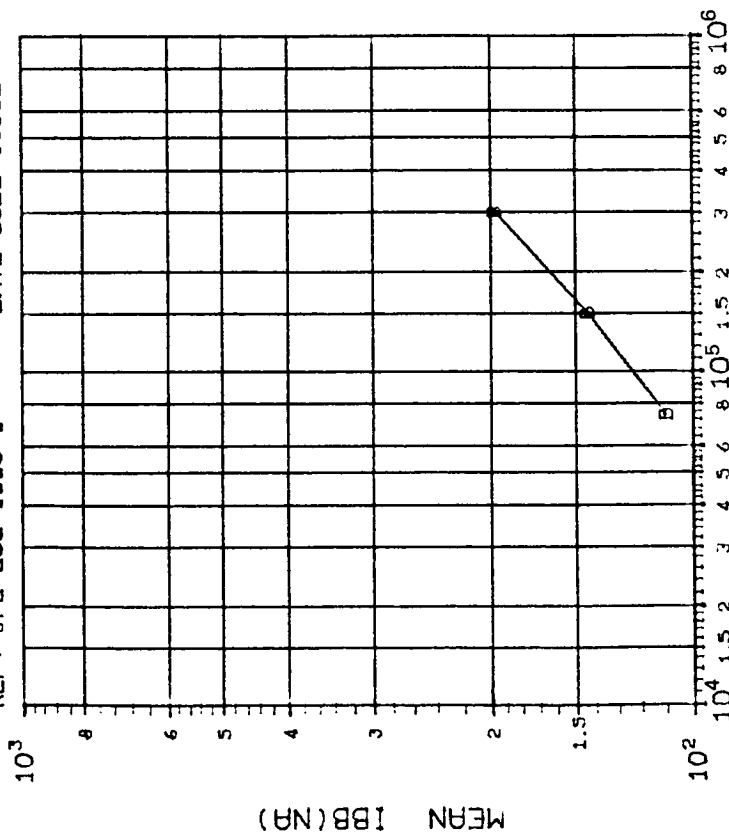
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600
	1000
	2000
28.06 39.39 .0608	

INITIAL MEAN VALUE IBA(NA) = $3.61 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(2)IBB (VO=OV) IN NA: VS DOSE

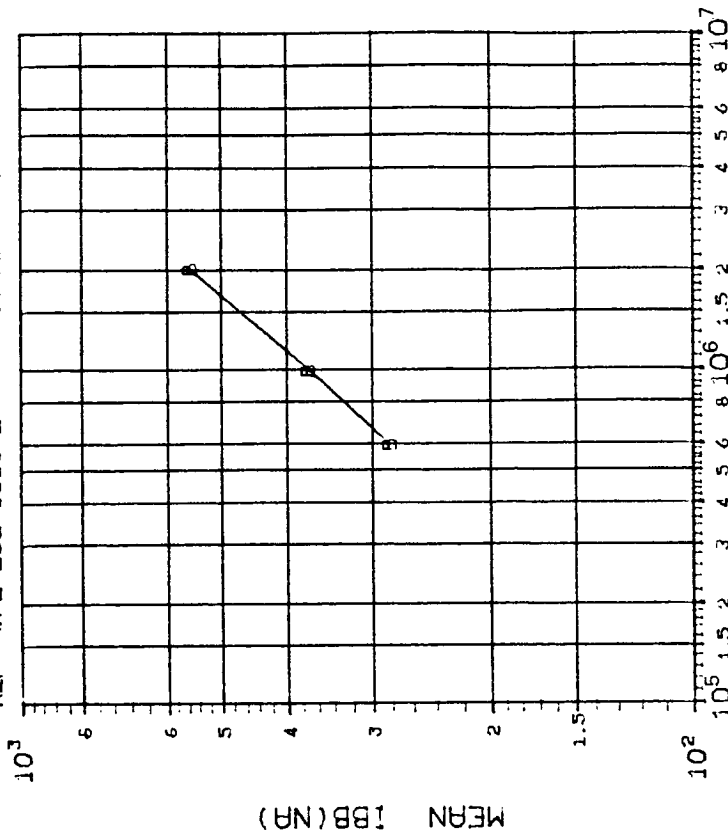
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
B	13.13	17.50
	17.50	21.10

INITIAL MEAN VALUE IBB(NA) = $3.51 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(2)IBB (VO=OV) IN NA: VS DOSE

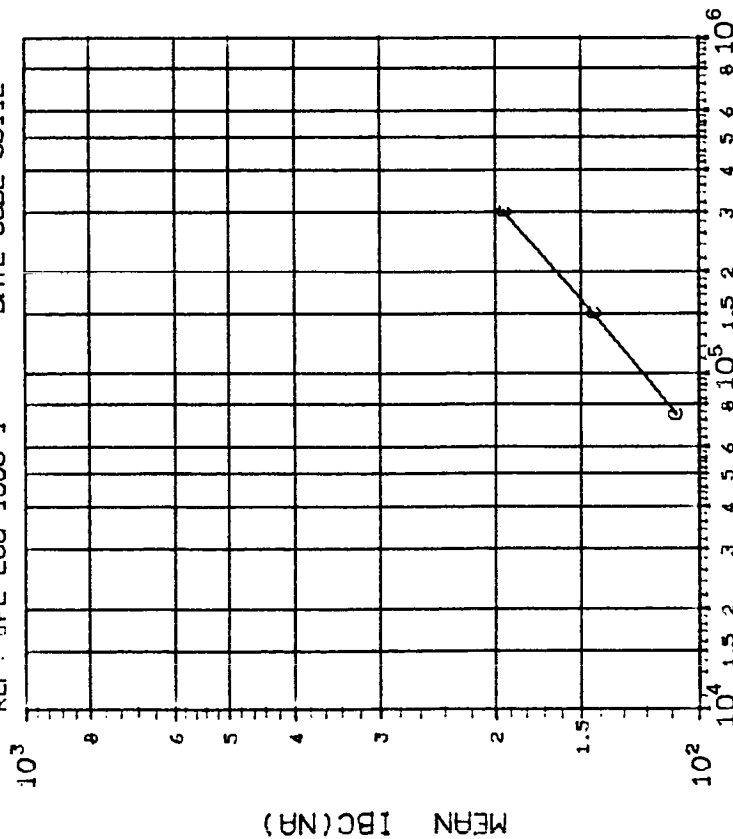
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000
B	24.93	32.53
	32.53	60.84

INITIAL MEAN VALUE IBB(NA) = $3.51 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(3)IBC (VO=OV) IN NA: VS DOSE

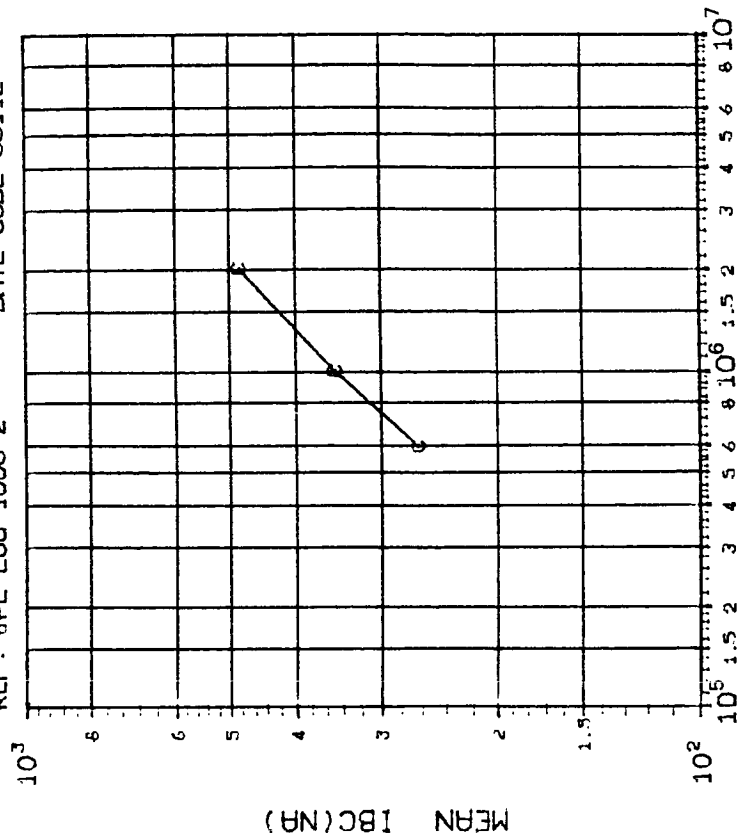
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	150
	150	300
	300	600

INITIAL MEAN VALUE IBC(NA) = 3.49X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(3)IBC (VO=OV) IN NA: VS DOSE

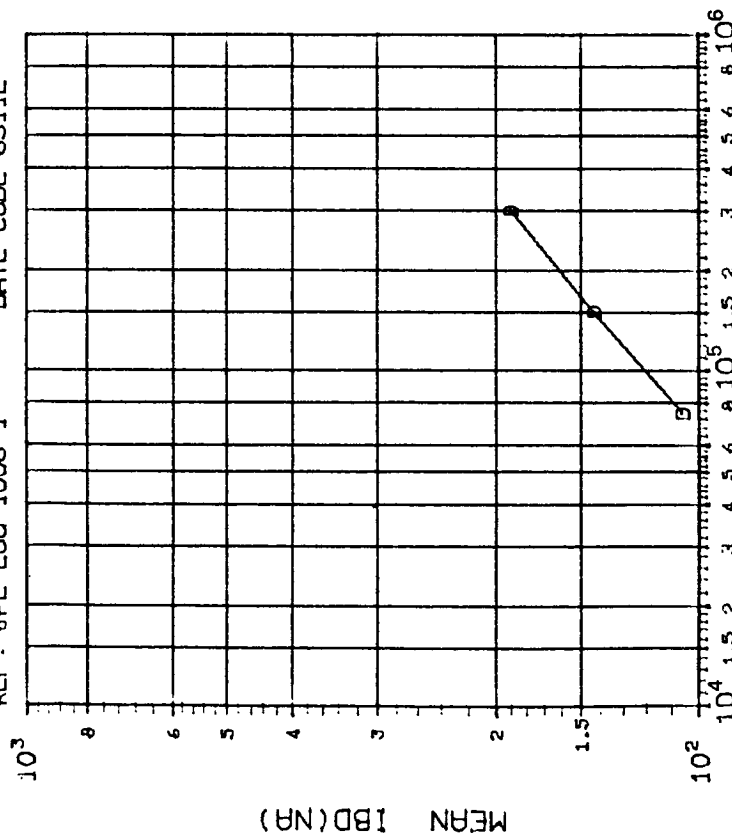
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	600	1000
	1000	2000
	2000	4000

INITIAL MEAN VALUE IBC(NA) = 3.49X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(4)IBD (VO=OV) IN NA: VS DOSE

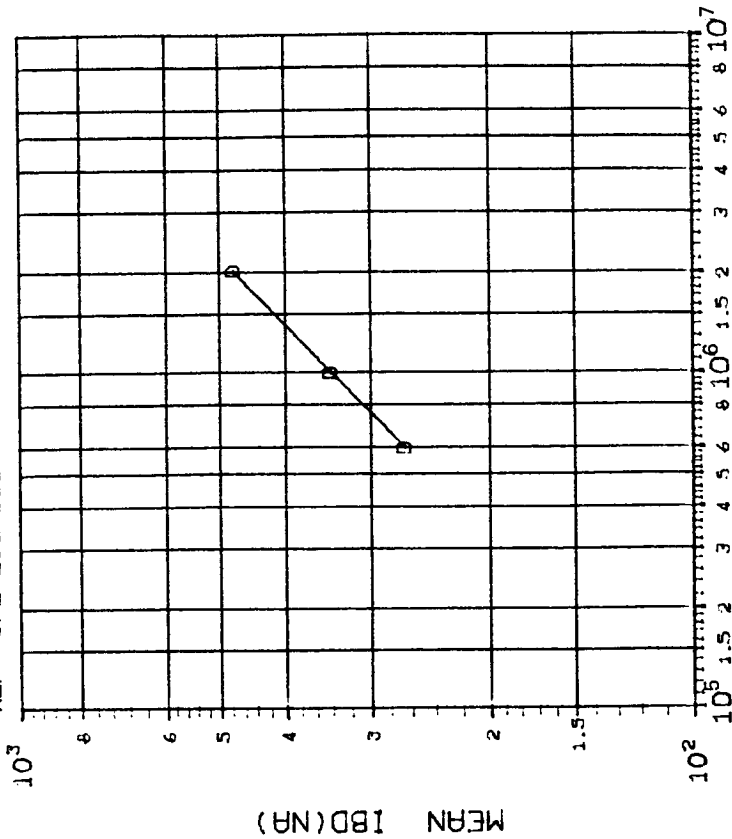
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75 150 300	
D	9.020 12.42 13.38	

INITIAL MEAN VALUE IBD(NA) = $3.39 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(4)IBD (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600 1000 2000	
D	22.75 33.72 43.21	

INITIAL MEAN VALUE IBD(NA) = $3.39 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1006-1 DATE CODE 8311E

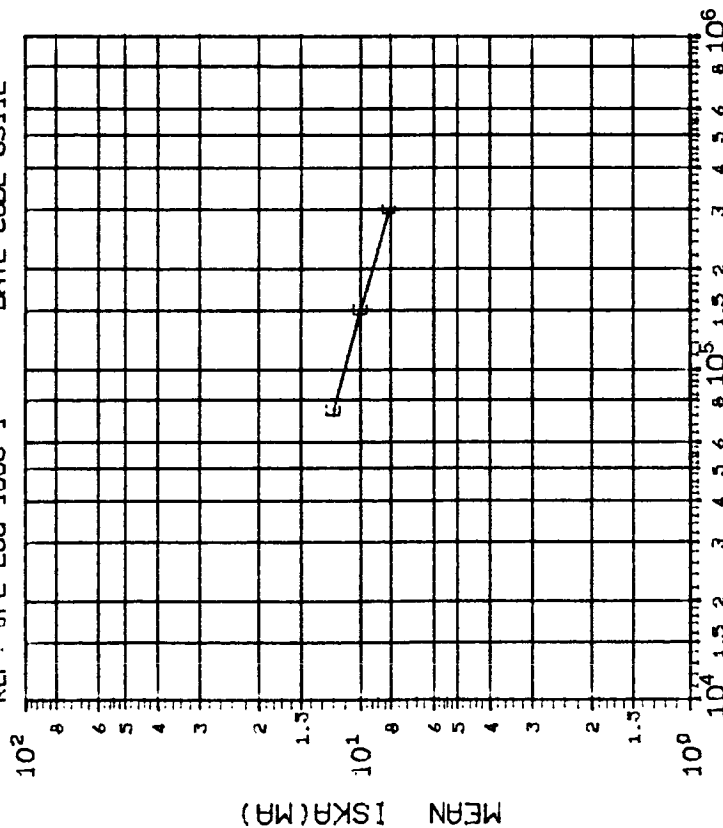


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75
	150
	300
E	.7737 .7278 .6809

INITIAL MEAN VALUE ISKA(MA) = 1.67×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-2 DATE CODE 8311E

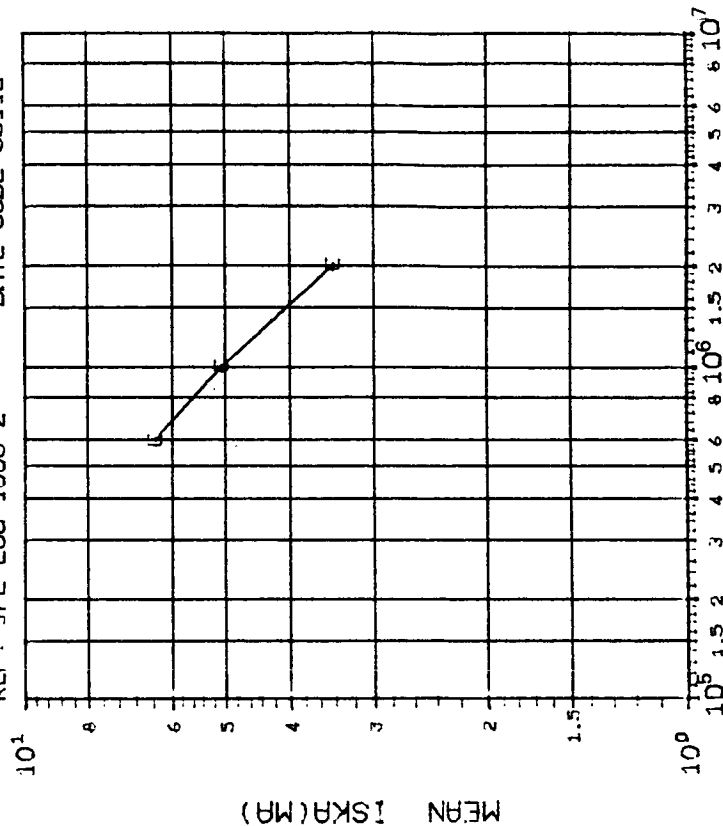


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600
	1000
	2000
E	.5610 .5410 .3933

INITIAL MEAN VALUE ISKA(MA) = 1.67×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E

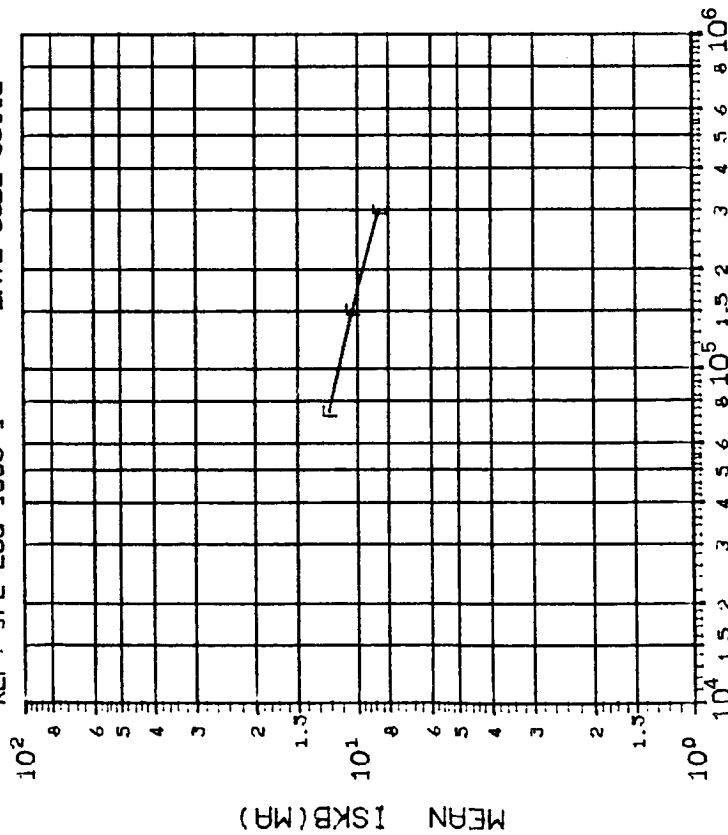


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
F	.6815	.6593 .6012

INITIAL MEAN VALUE ISKB(MA) = $1.66 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E

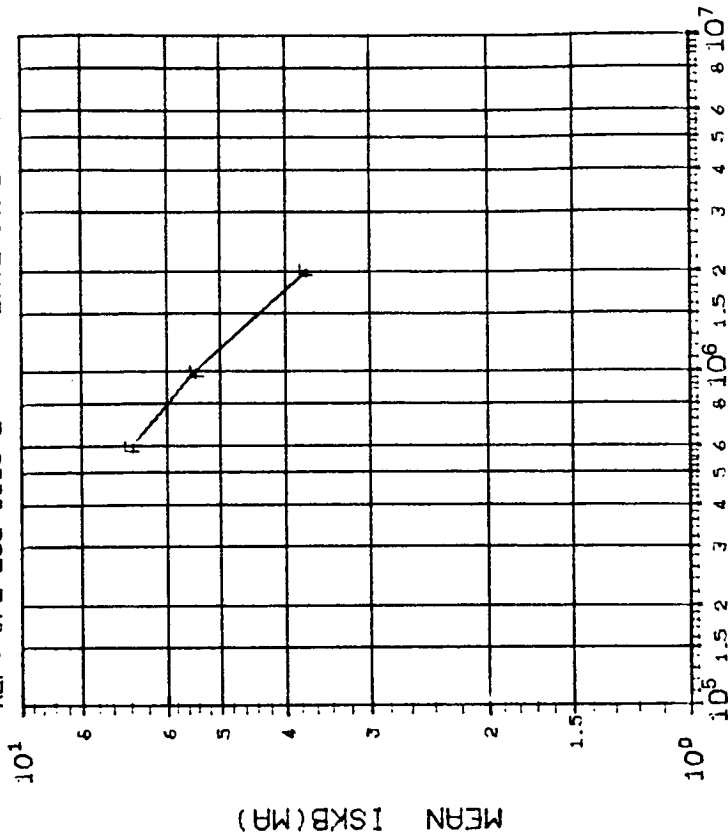


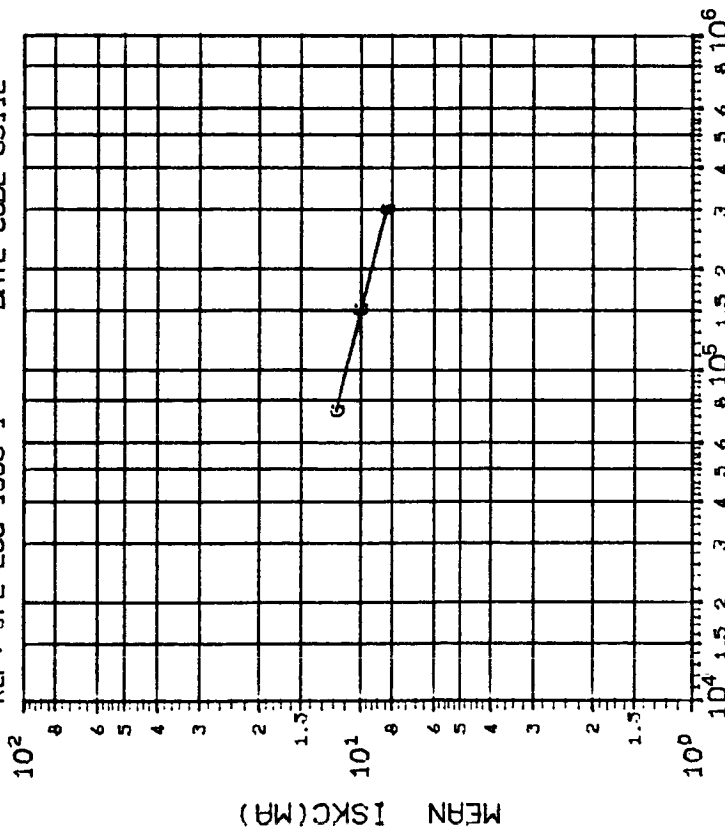
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000 2000
F	.5269	.4845 .3857

INITIAL MEAN VALUE ISKB(MA) = $1.66 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)ISKC (V₀=-13.5V) IN MA: VS DOSE

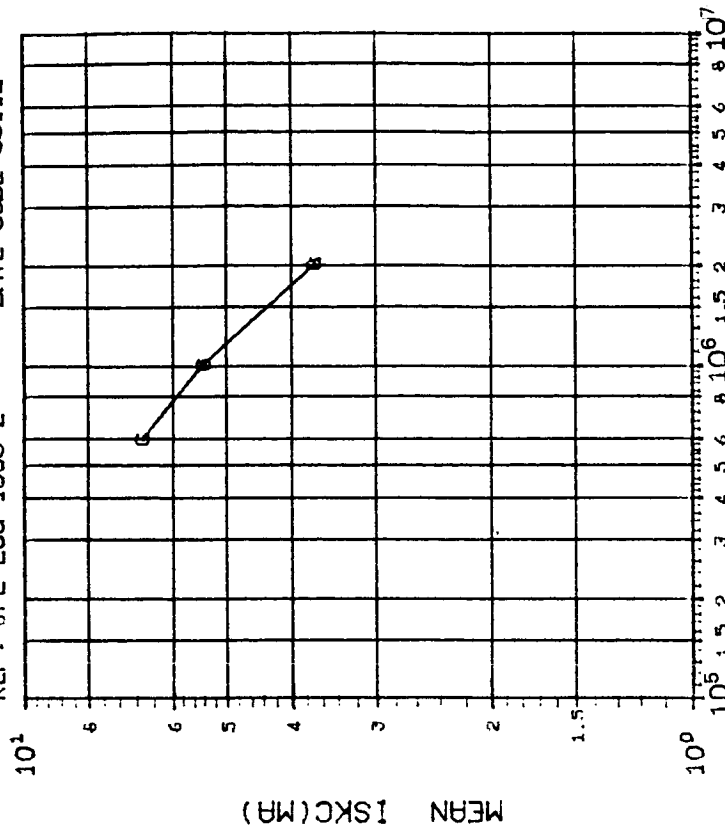
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75
	300
.6853 .6689 .6094	

INITIAL MEAN VALUE ISKC(MA) = 1.62X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 6 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1008-2 DATE CODE 8311E



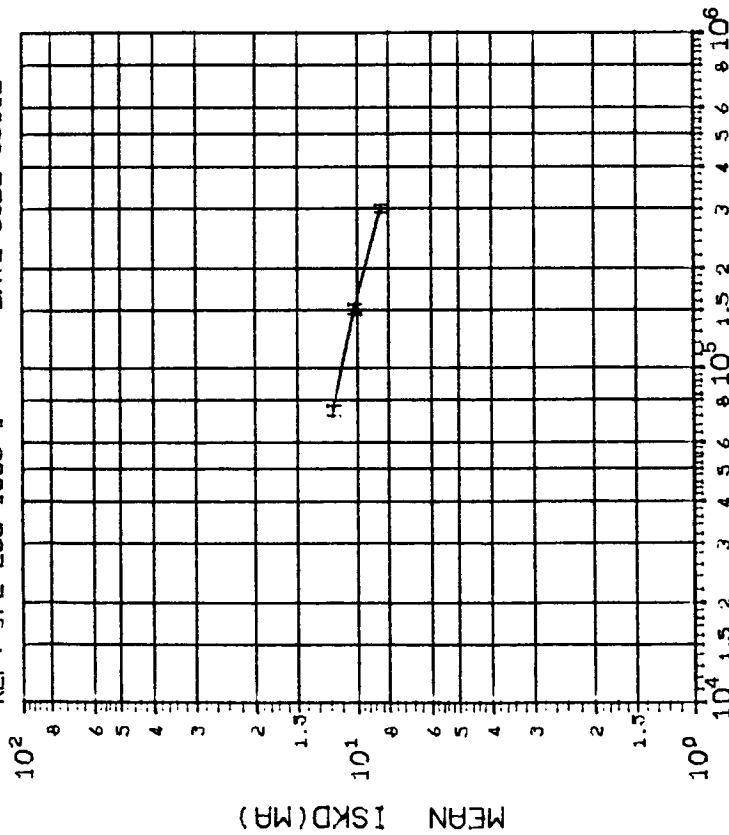
DOSE, rads(Si) 2.5 MeV electrons

(7)ISKC (V₀=-13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600
	2000
.5229 .4977 .5612	

INITIAL MEAN VALUE ISKC(MA) = 1.62X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-1 DATE CODE 8311E



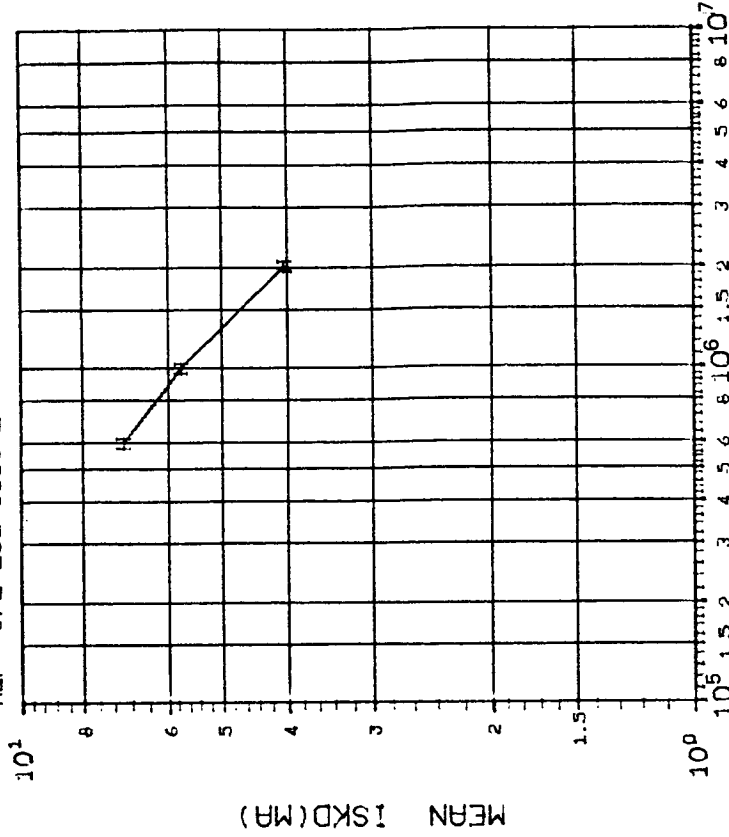
DOSE, rads(Si) 2.5 MeV electrons

(8)ISKD (V0E--13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	.7742 .7554 .9026

INITIAL MEAN VALUE ISKD(MA) = $1.62 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 6 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1008-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(8)ISKD (V0E--13.5V) IN MA: VS DOSE

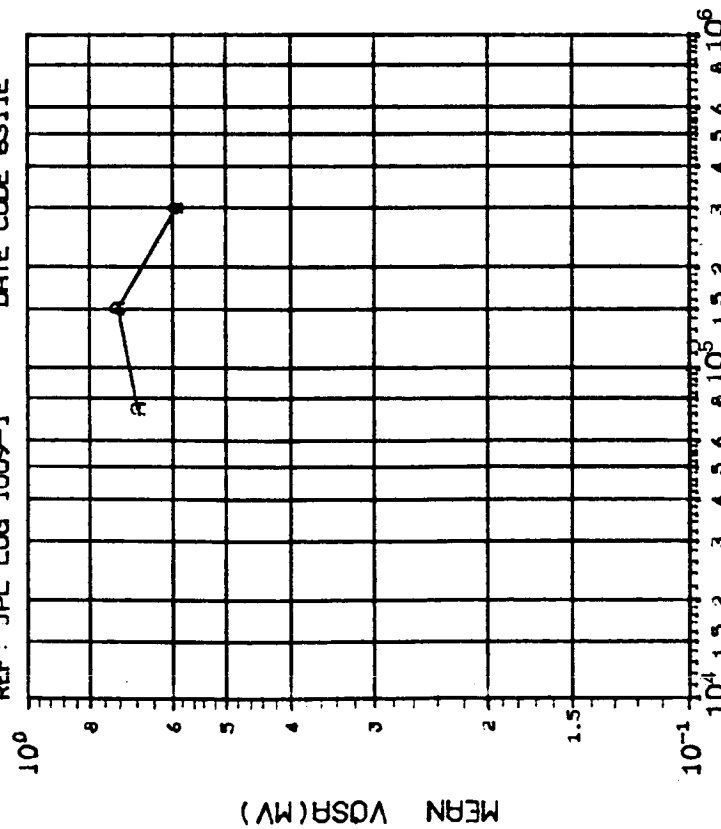
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	.6033 .5461 .4488

INITIAL MEAN VALUE ISKD(MA) = $1.62 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(1)VOSA (VO=0V) IN MV: VS DOSE

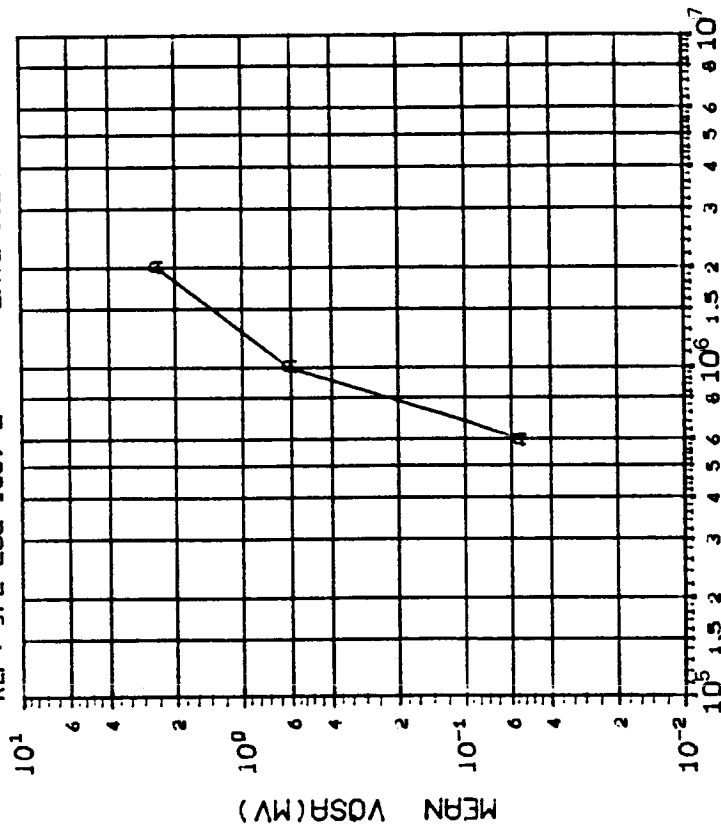
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
.3167 .3292 .3462	

INITIAL MEAN VALUE VOSA(MV) = 6.29×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



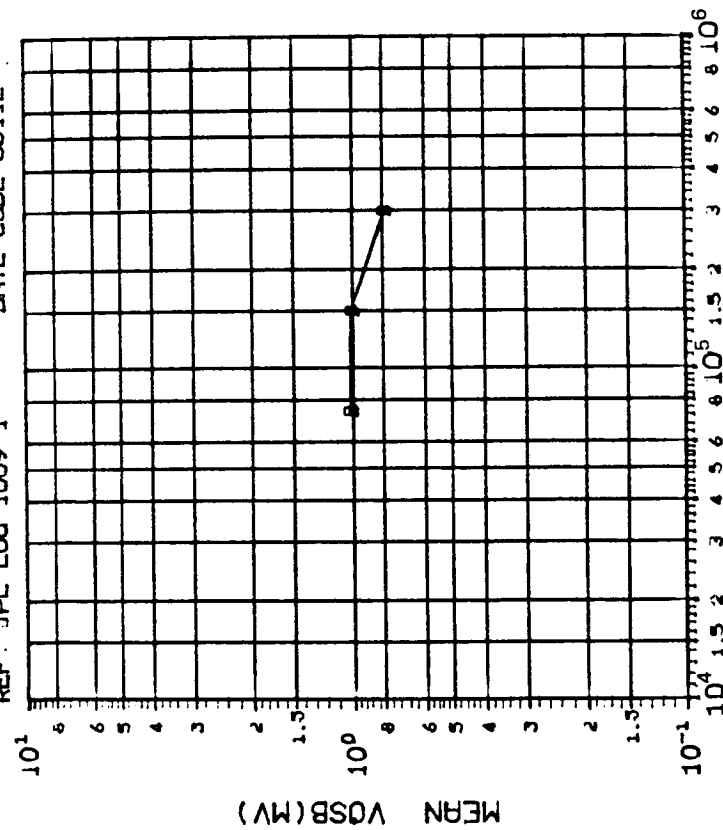
DOSE, rads(Si) 2.5 MeV electrons

(1)VOSA (VO=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600
	1000
	2000
.4624 .4673 .6742	

INITIAL MEAN VALUE VOSA(MV) = 6.29×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-1 DATE CODE 8311E



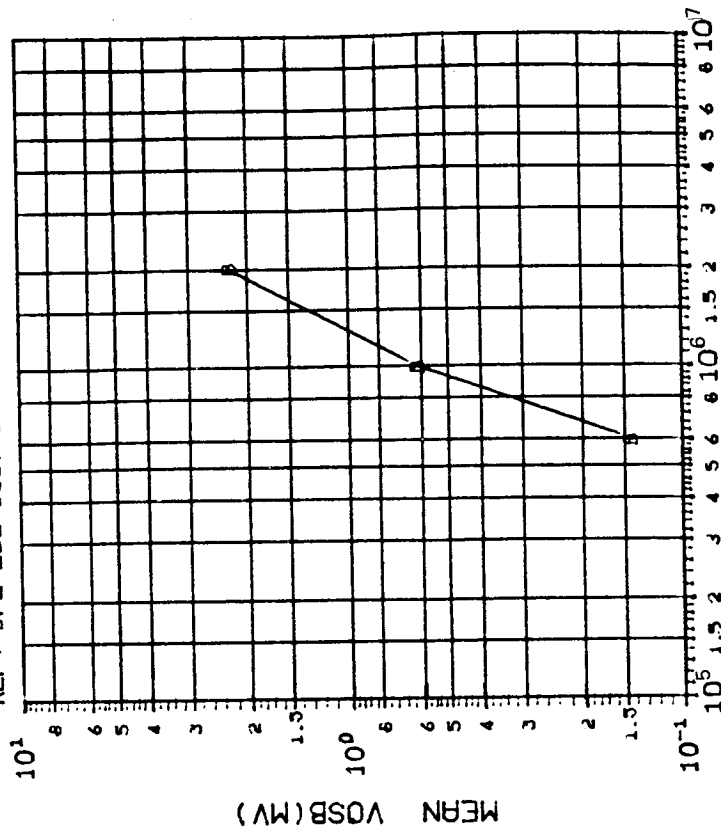
DOSE, rads(Si) 2.5 MeV electrons

(2)VOSB (VO=0V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
B	.5338 .5358 .5598

INITIAL MEAN VALUE VOSB(MV) = 9.85×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(2)VOSB (VO=0V) IN MV: VS DOSE

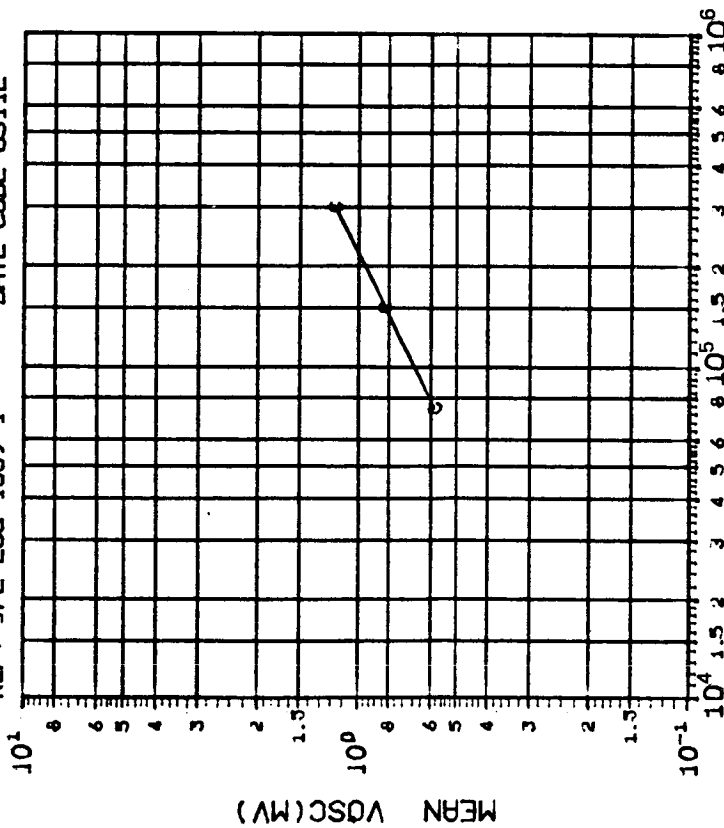
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600
	1000
	2000
B	.6056 .7145 .7920

INITIAL MEAN VALUE VOSB(MV) = 9.85×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(3)VOSC (V_O=0V) IN MV: VS DOSE

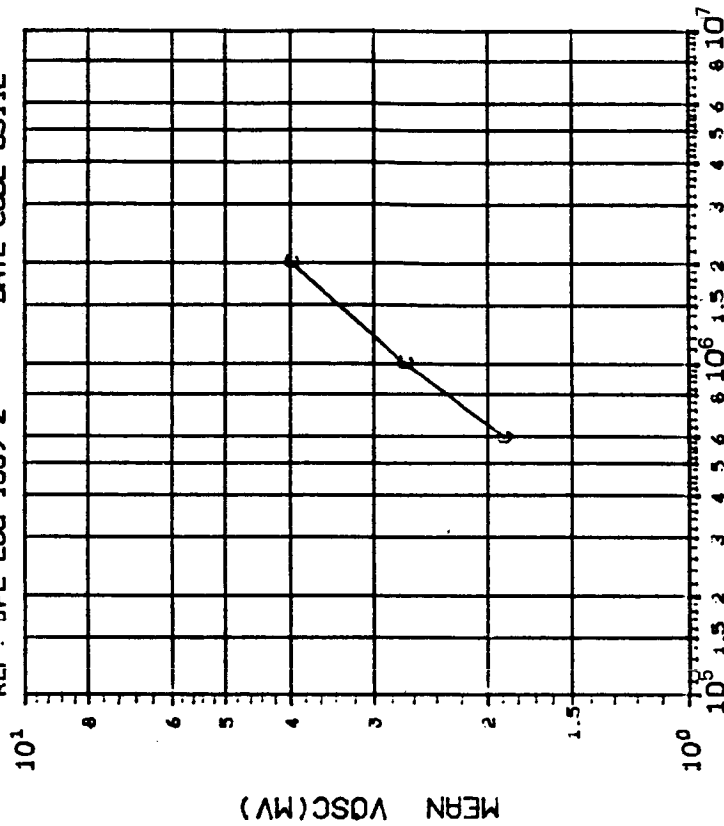
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	300
	.3456	.4378

INITIAL MEAN VALUE VOSC(MV) = 2.12×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(3)VOSC (V_O=0V) IN MV: VS DOSE

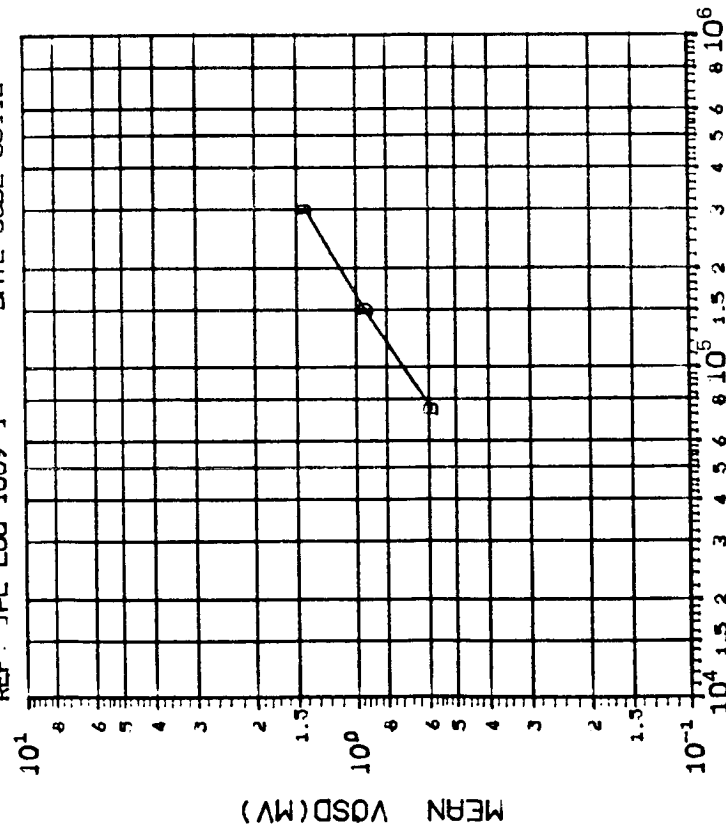
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	600	2000
	.6107	.9327

INITIAL MEAN VALUE VOSC(MV) = 2.12×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rad(Si) 2.5 MeV electrons

(4)VOSD (V0=0V) IN MV: VS DOSE

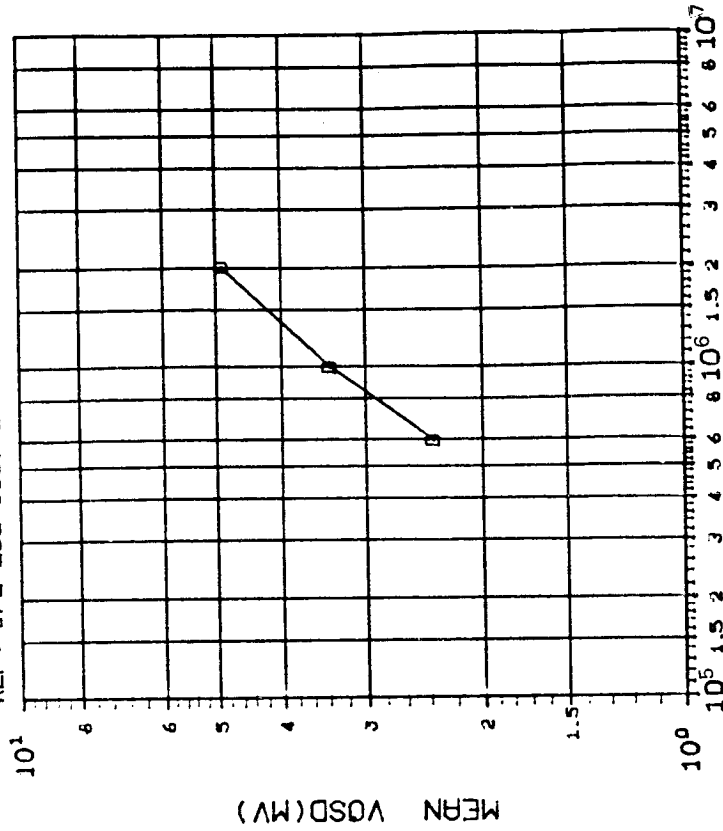
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
D	.4763 .5615 .6739

INITIAL MEAN VALUE VOSD(MV) = 1.72×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rad(Si) 2.5 MeV electrons

(4)VOSD (V0=0V) IN MV: VS DOSE

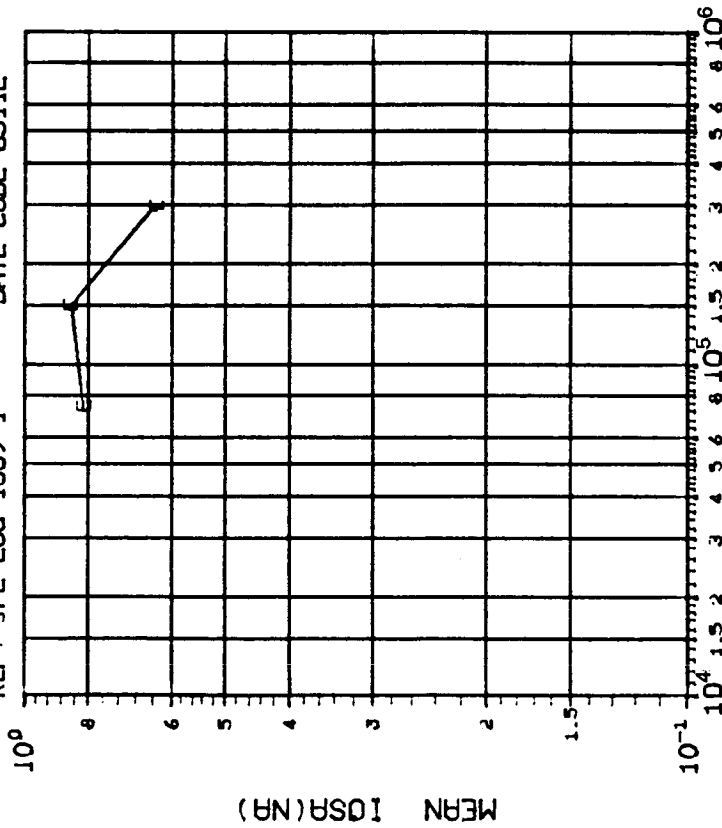
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
D	.8459 1.026 1.125

INITIAL MEAN VALUE VOSD(MV) = 1.72×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



(5)IOSA (VO=OV) IN NA: VS DOSE

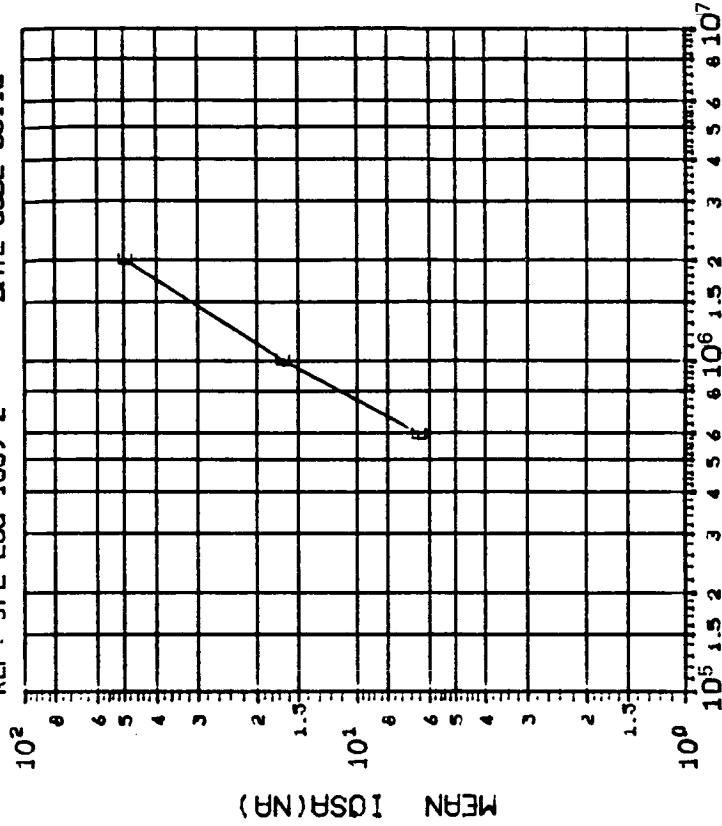
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
E	.7266	1.058 1.133

INITIAL MEAN VALUE IOSA(NA) = 5.85×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E

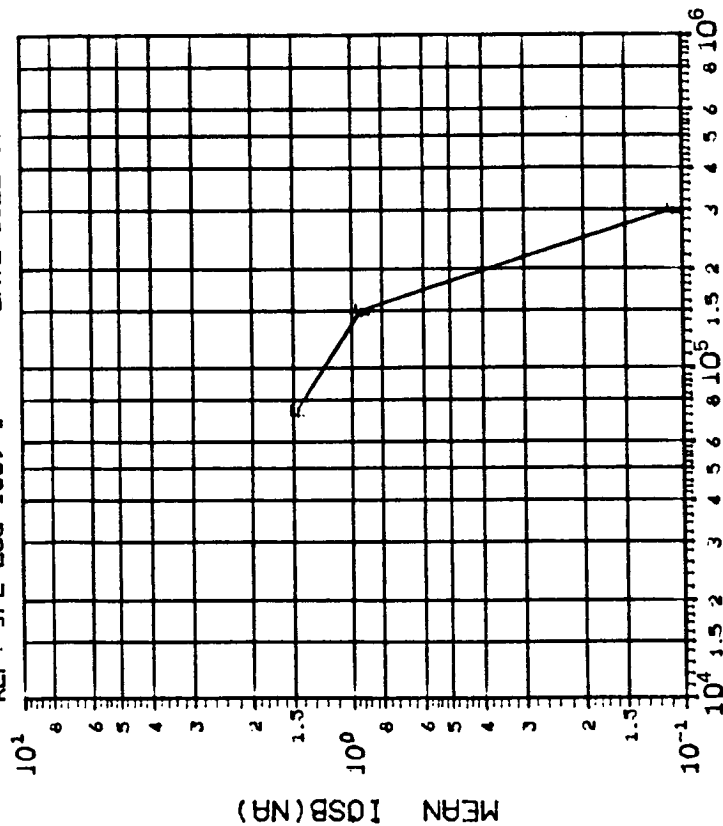


(5)IOSA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000 2000
E	3.696	6.473 13.72

INITIAL MEAN VALUE IOSA(NA) = 5.85×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-1 DATE CODE 8311E

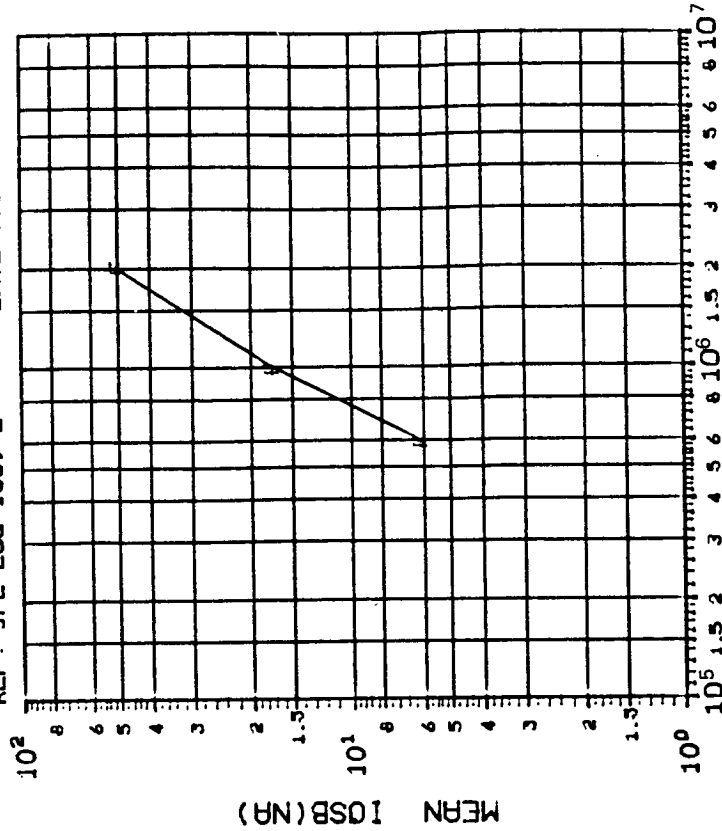


DOSE, rads(Si) 2.5 MeV electrons
 (6)10SB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75
	150
	300
.9578 1.634 1.624	

INITIAL MEAN VALUE 10SB(NA) = 3.09×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AMD 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons
 (6)10SB (VO=OV) IN NA: VS DOSE

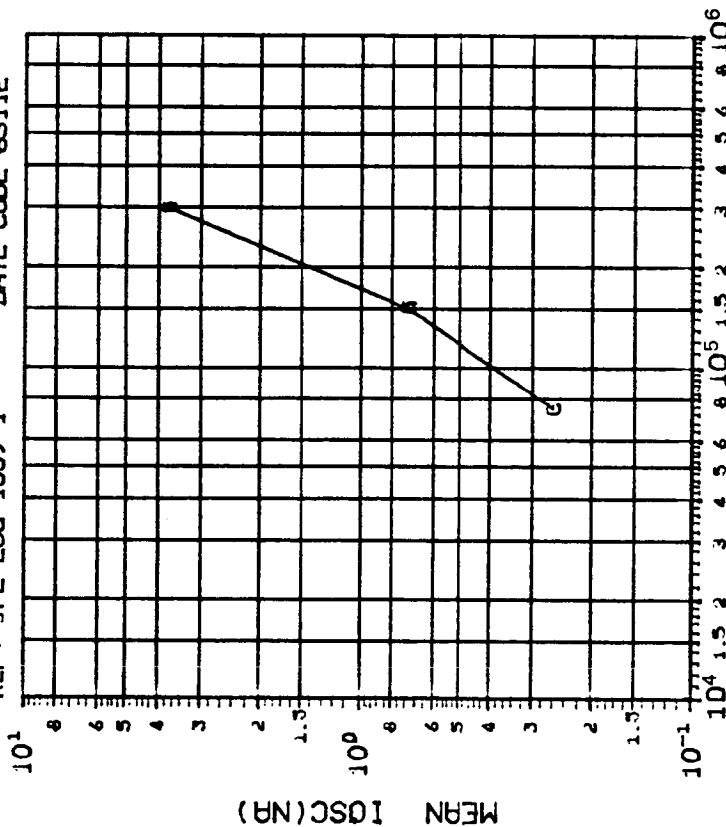
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600
	1000
	2000
2.913 6.211 15.29	

INITIAL MEAN VALUE 10SB(NA) = 3.09×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)IOSC (VO=OV) IN NR: VS DOSE

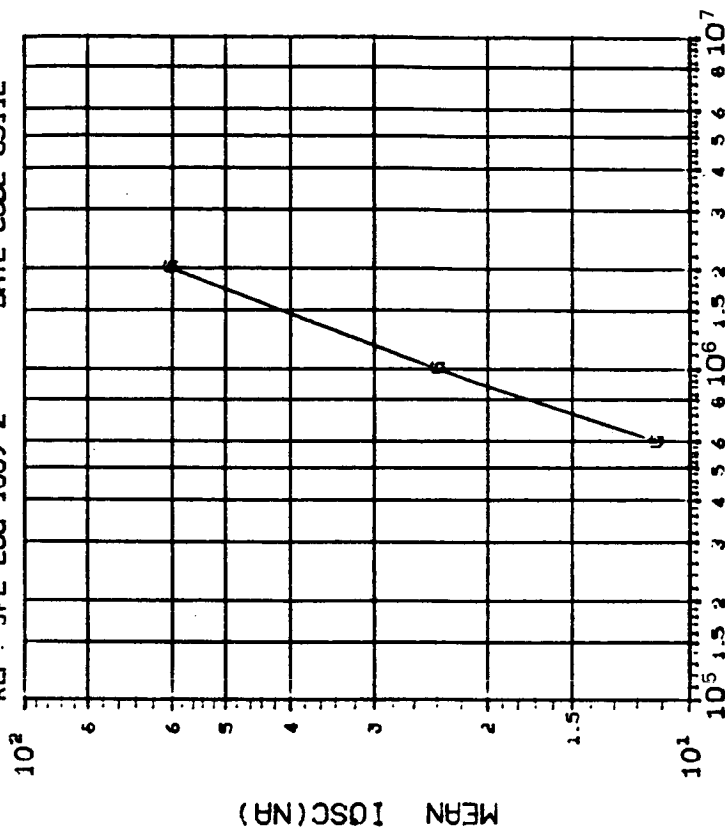
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	.6378 1.364 2.331

INITIAL MEAN VALUE IOSC(NR) = 1.02×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)IOSC (VO=OV) IN NR: VS DOSE

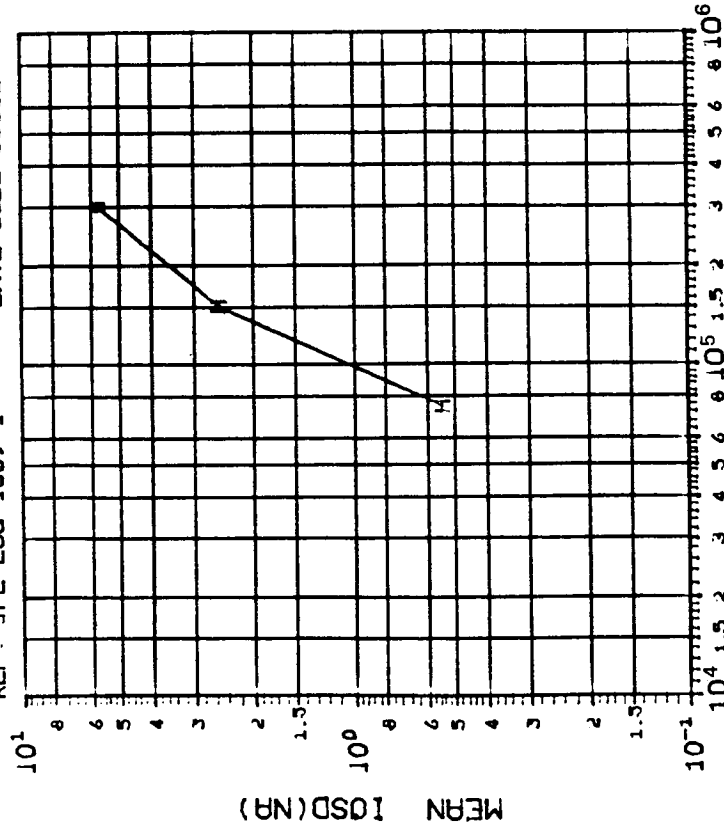
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	4.445 8.571 17.18

INITIAL MEAN VALUE IOSC(NR) = 1.02×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(8)IOSD (VO=0V) IN NA: VS DOSE

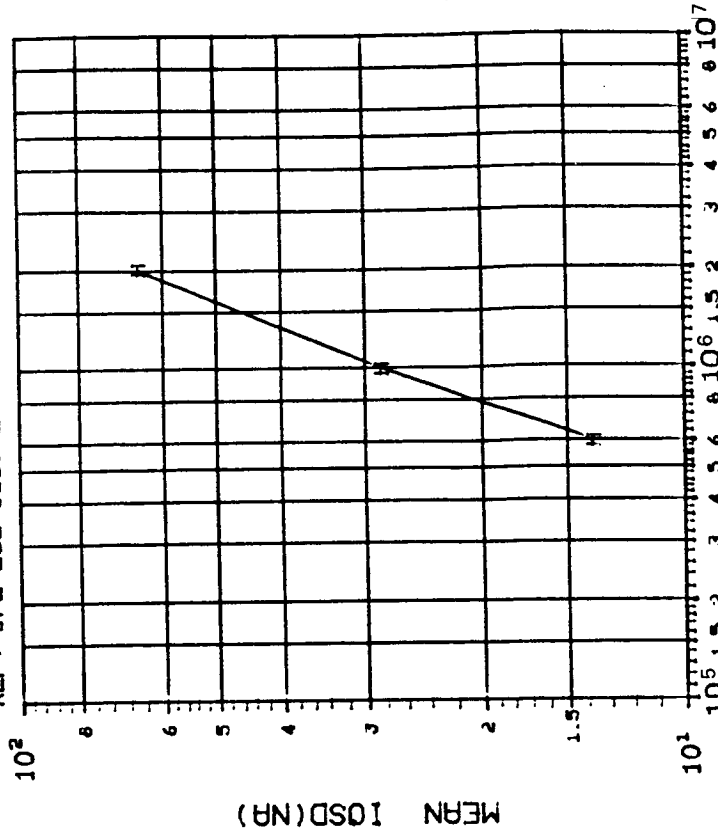
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	1.058 1.576 2.534

INITIAL MEAN VALUE IOSD(NA) = 6.78×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



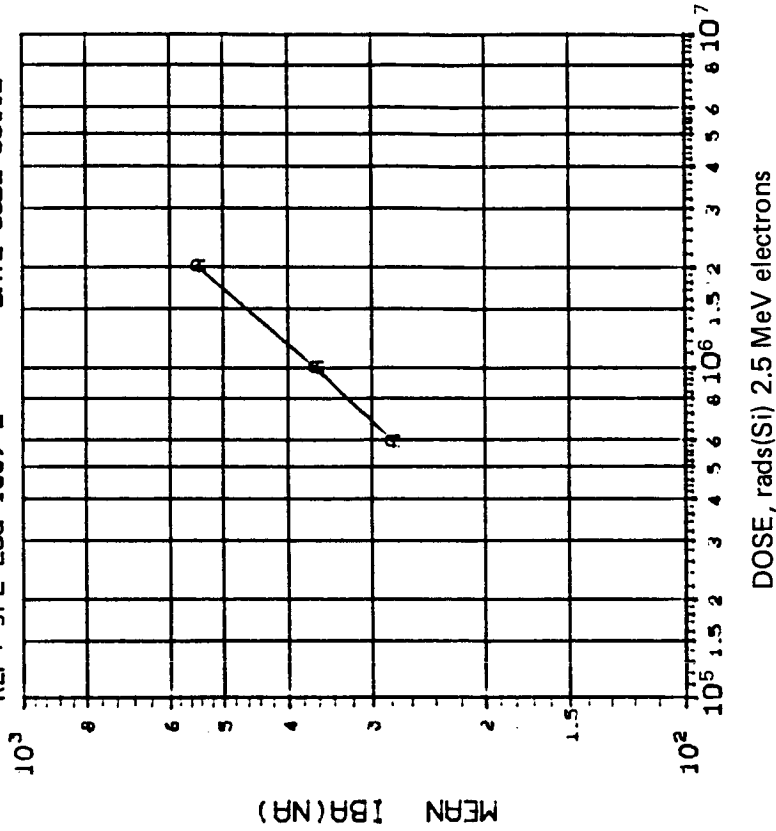
DOSE, rads(Si) 2.5 MeV electrons

(8)IOSD (VO=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	6.309 11.07 21.51

INITIAL MEAN VALUE IOSD(NA) = 6.78×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-22-83
REF: JPL LOG 1009-2 DATE CODE 8311E

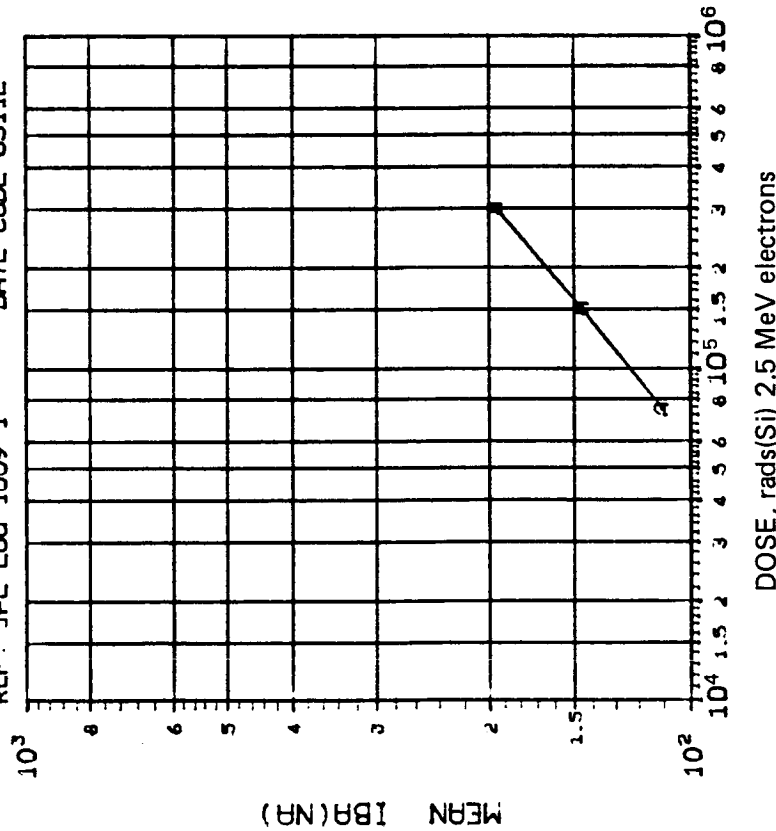


(1) IBA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000
A	44.51	60.48
	91.02	

INITIAL MEAN VALUE IBA(NA) = 3.37X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: AMD 7 DEVICES TEST DATE 04-22-83
REF: JPL LOG 1009-1 DATE CODE 8311E



(1) IBA (VO=OV) IN NA: VS DOSE

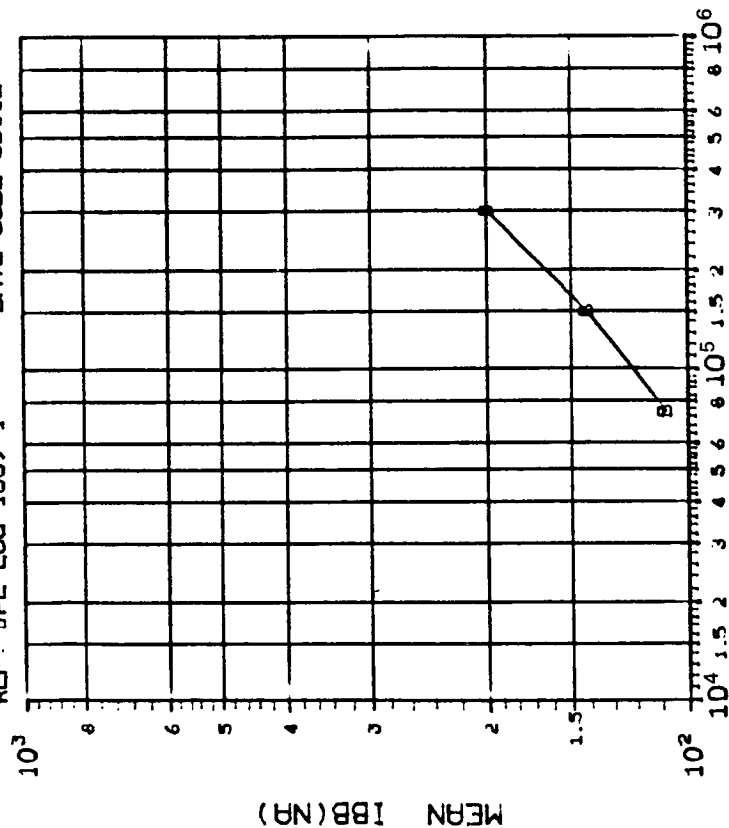
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
A	18.70	25.07
	30.48	

INITIAL MEAN VALUE IBA(NA) = 3.37X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(2)1BB (VO=OV) IN NA: VS DOSE

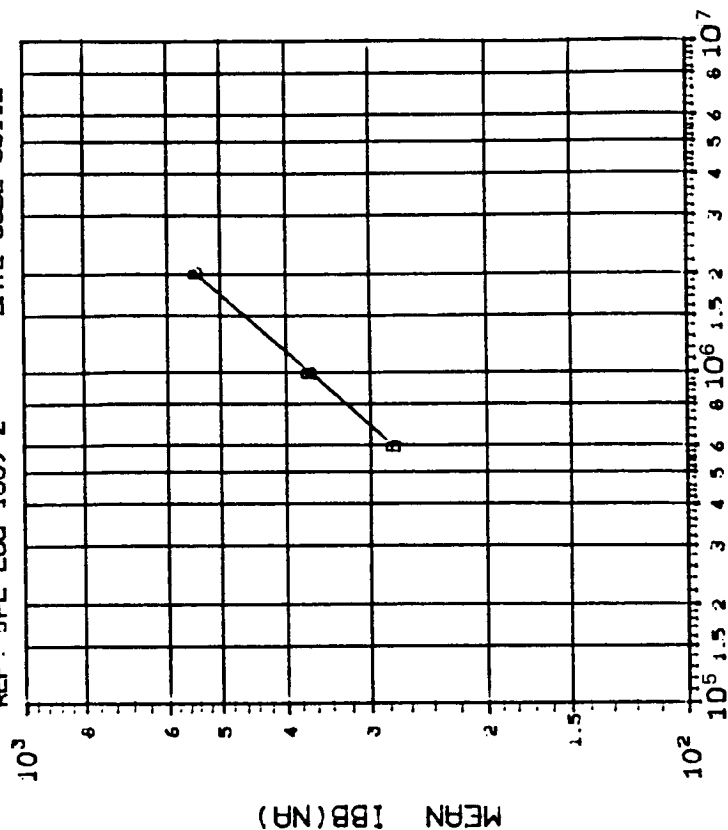
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	17.68 23.98 31.23

INITIAL MEAN VALUE 1BB(NA) = $3.27 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(2)1BB (VO=OV) IN NA: VS DOSE

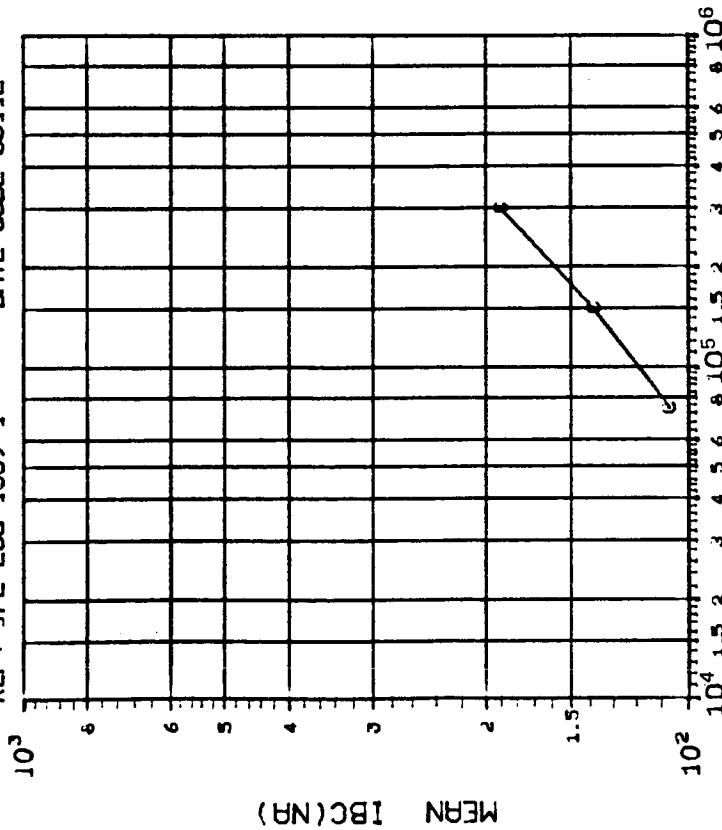
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	45.00 58.68 86.79

INITIAL MEAN VALUE 1BB(NA) = $3.27 \times 10^{+3}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rad(Si) 2.5 MeV electrons

(3)IBC (VO=OV) IN NA: VS DOSE

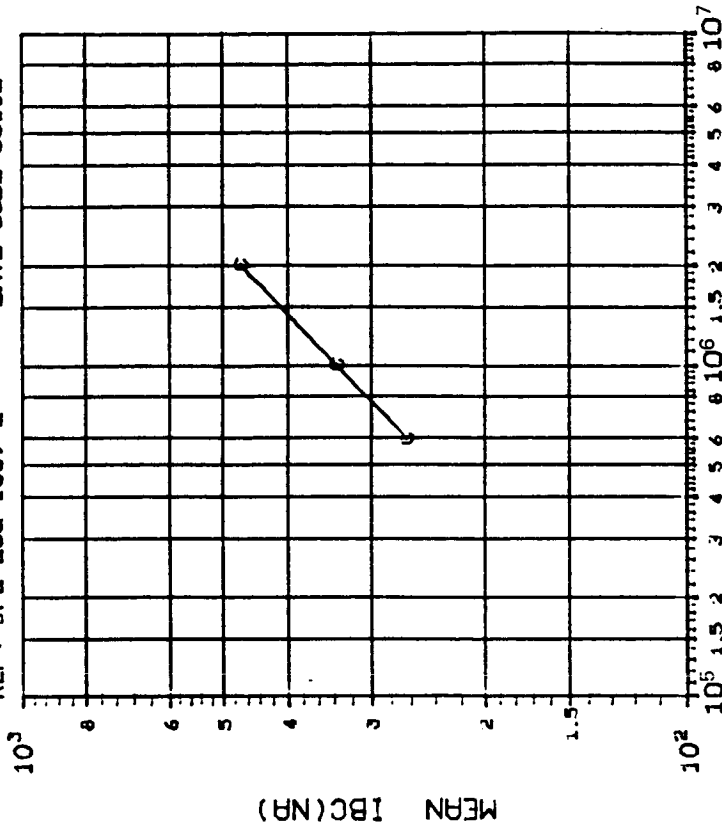
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300

INITIAL MEAN VALUE IBC(NA) = 3.35×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rad(Si) 2.5 MeV electrons

(3)IBC (VO=OV) IN NA: VS DOSE

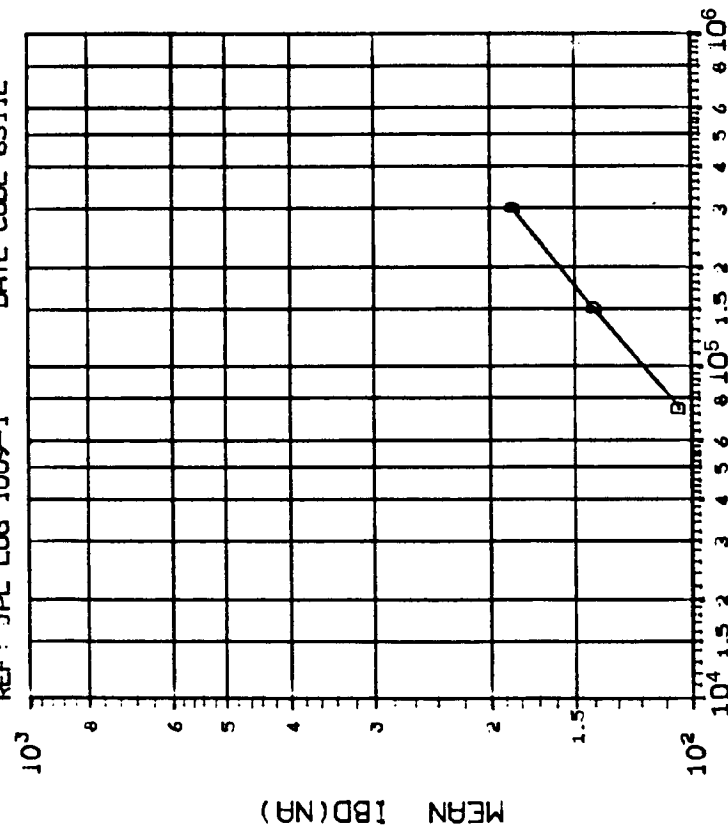
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600
	1000
	2000

INITIAL MEAN VALUE IBC(NA) = 3.35×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(4)IBD (VO=OV) IN NA: VS DOSE

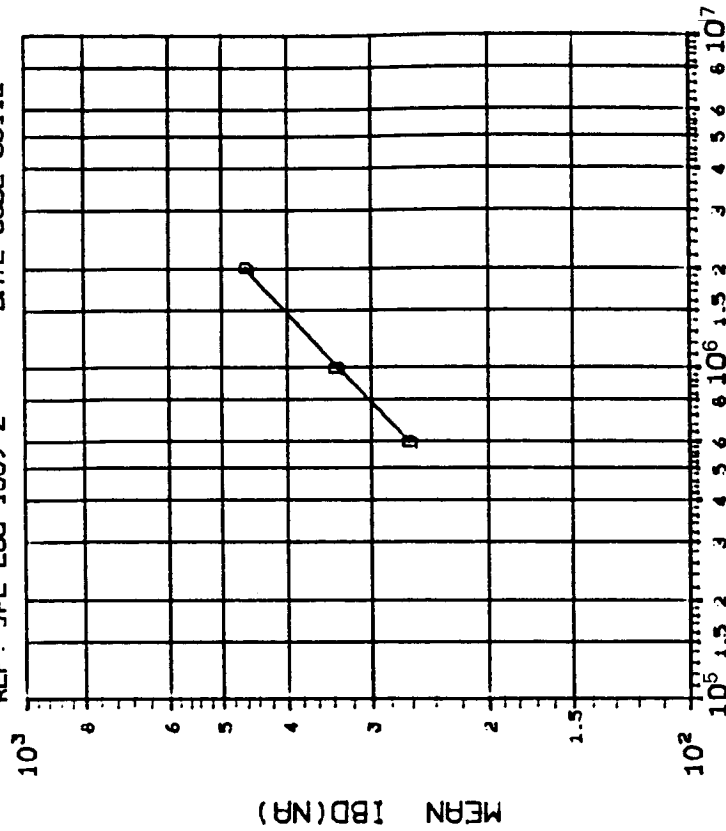
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
D	19.37	24.59
	24.59	32.05

INITIAL MEAN VALUE IBD(NA) = $3.24 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(4)IBD (VO=OV) IN NA: VS DOSE

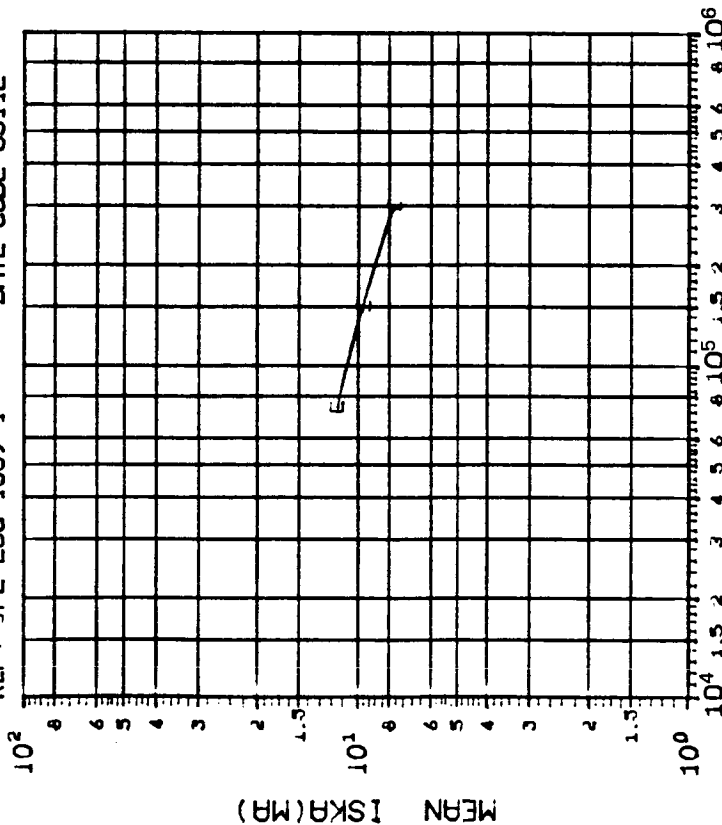
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000
D	43.62	56.16
	56.16	75.39

INITIAL MEAN VALUE IBD(NA) = $3.24 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



(5) ISKA (V₀=-13.5V) IN MA: VS DOSE

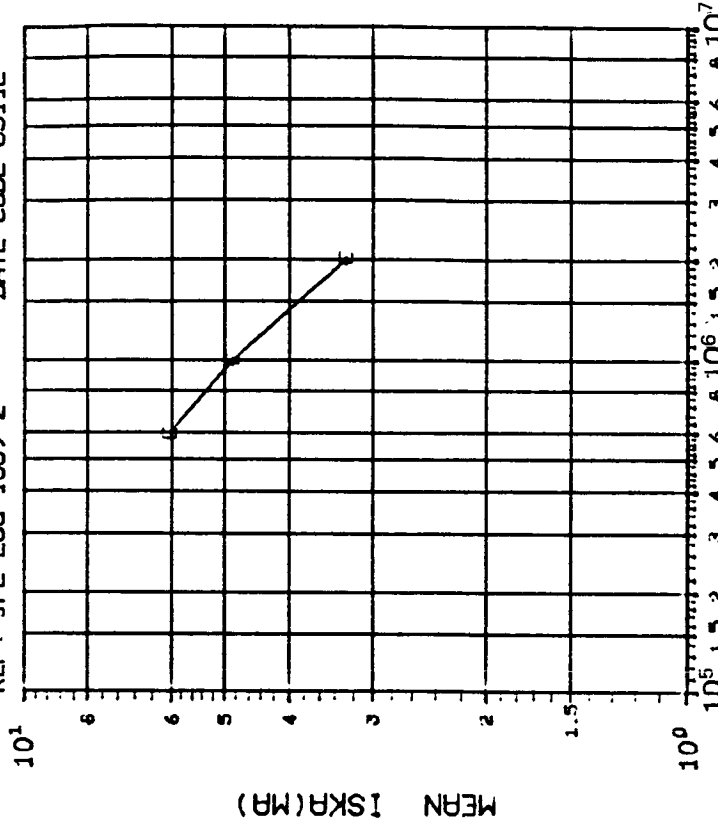
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75
	150
	300
E	1.092 1.052 .9232

INITIAL MEAN VALUE ISKA(MA) = $1.62 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E

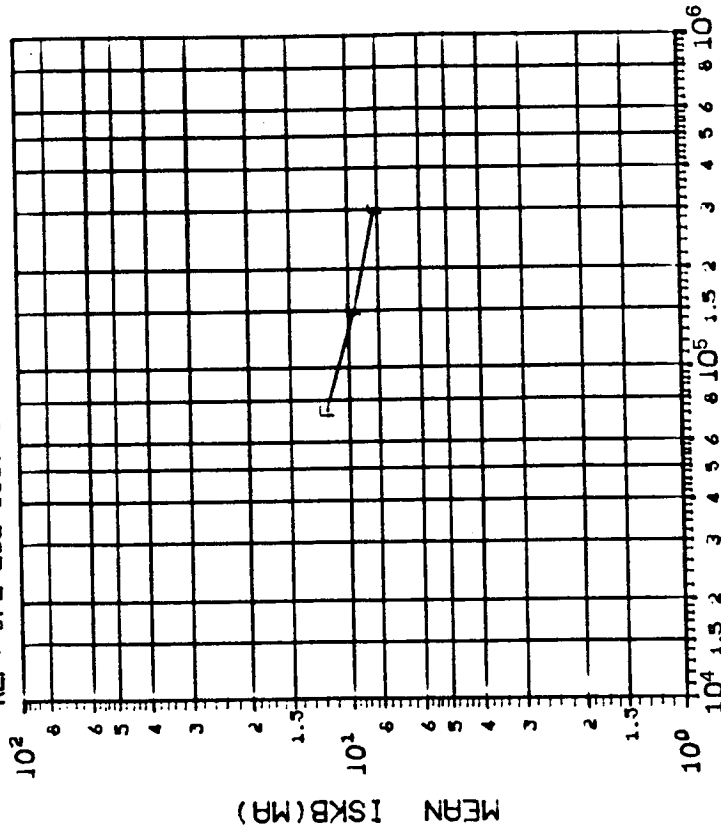


(5) ISKA (V₀=-13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600
	1000
	2000
E	.7274 .6670 .4973

INITIAL MEAN VALUE ISKA(MA) = $1.62 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AND 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-1 DATE CODE 8311E

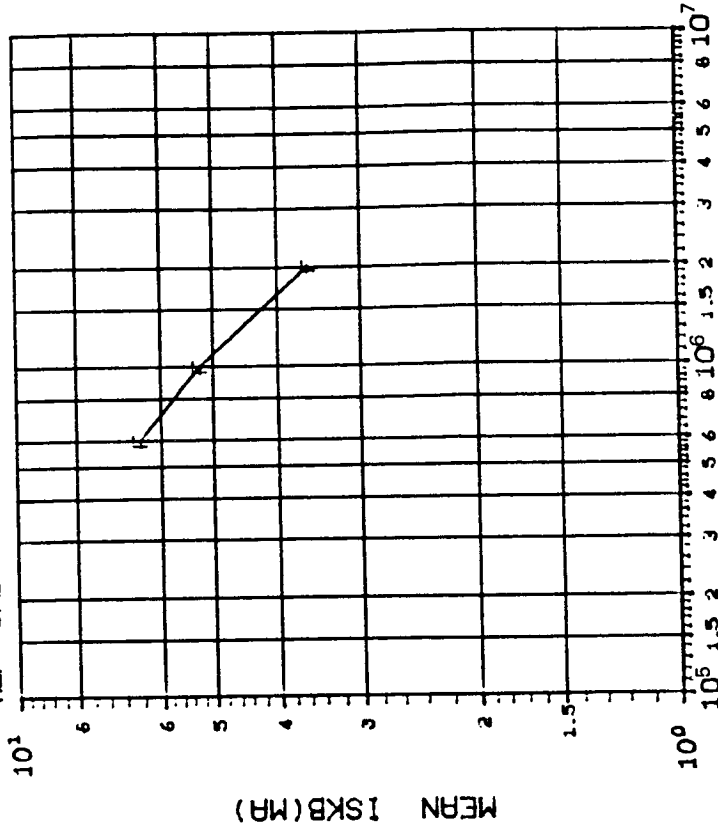


(6)ISKB (VO=-13.5V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	1.156 1.203 .9554

INITIAL MEAN VALUE ISKB(MR) = $1.61 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: AND 7 DEVICES TEST DATE 04-22-83
 REF: JPL LOG 1009-2 DATE CODE 8311E



(6)ISKB (VO=-13.5V) IN MA: VS DOSE

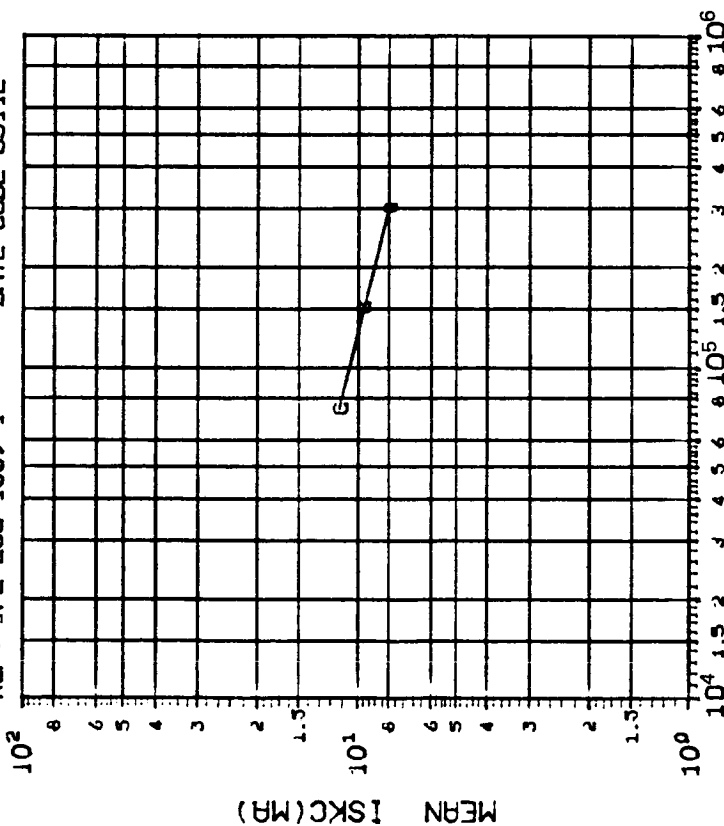
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	.7686 .7068 .5111

INITIAL MEAN VALUE ISKB(MR) = $1.61 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)ISKC (V_{CE}=-13.5V) IN MA: VS DOSE

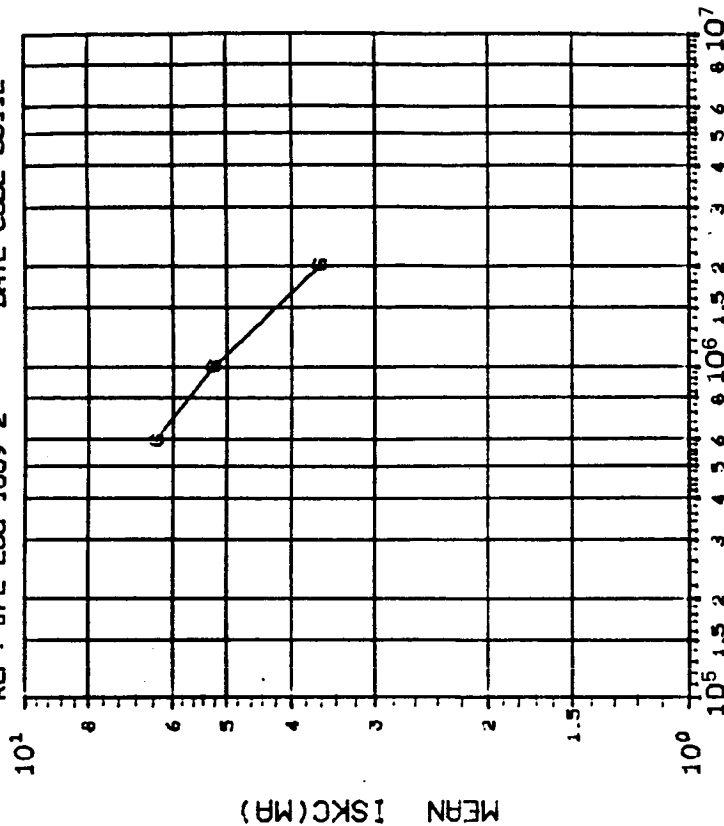
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
	1.190 1.076 .9634

INITIAL MEAN VALUE ISKC(MA) = 1.57×10^{-11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(7)ISKC (V_{CE}=-13.5V) IN MA: VS DOSE

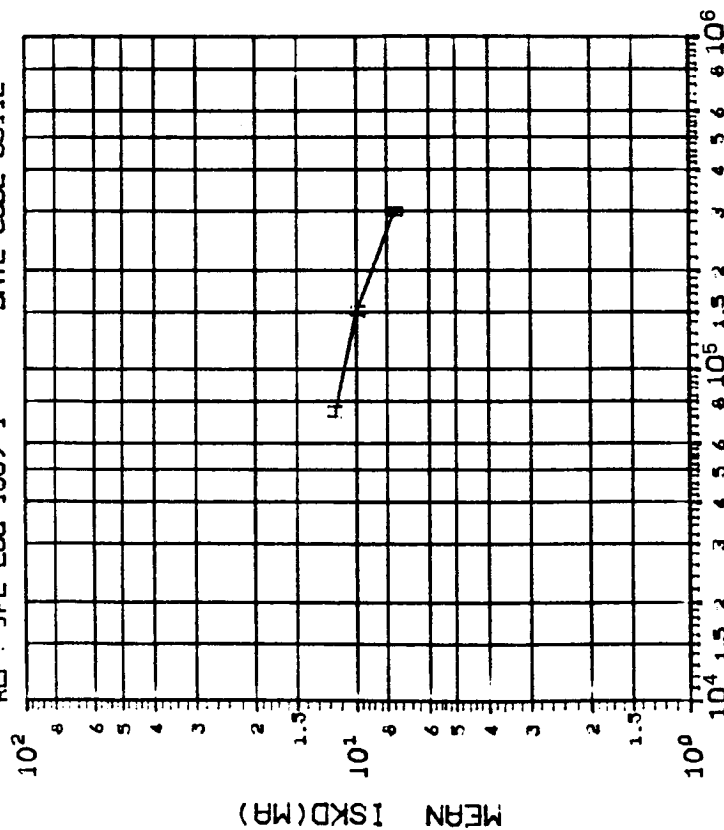
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
	.7631 .6744 .4906

INITIAL MEAN VALUE ISKC(MA) = 1.57×10^{-11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-1 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(8)ISKD (V0=-13.5V) IN MA: VS DOSE

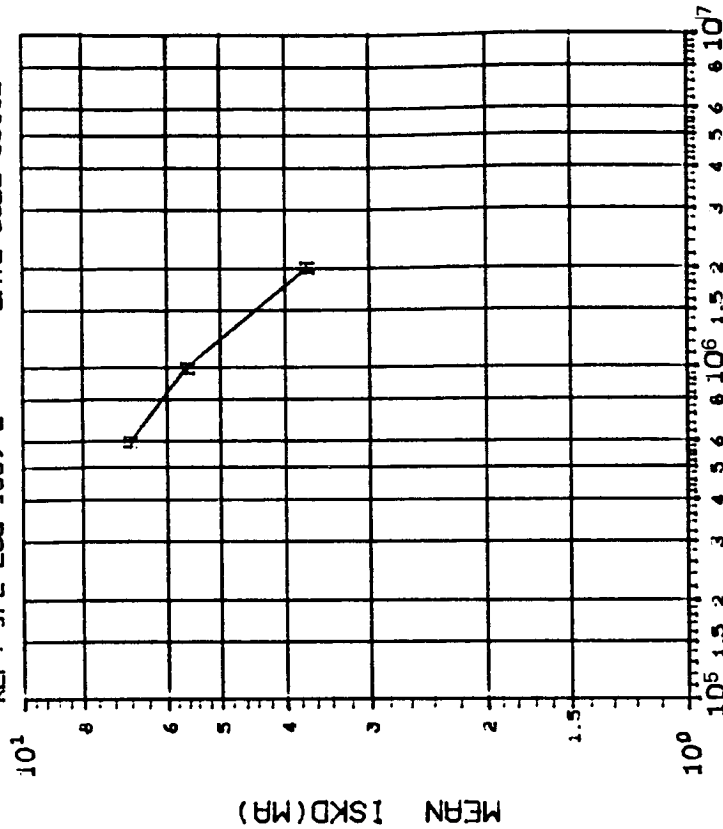
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	150
	300

INITIAL MEAN VALUE ISKD(MR) = 1.60×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: AMD 7 DEVICES TEST DATE 04-22-83

REF: JPL LOG 1009-2 DATE CODE 8311E



DOSE, rads(Si) 2.5 MeV electrons

(8)ISKD (V0=-13.5V) IN MA: VS DOSE

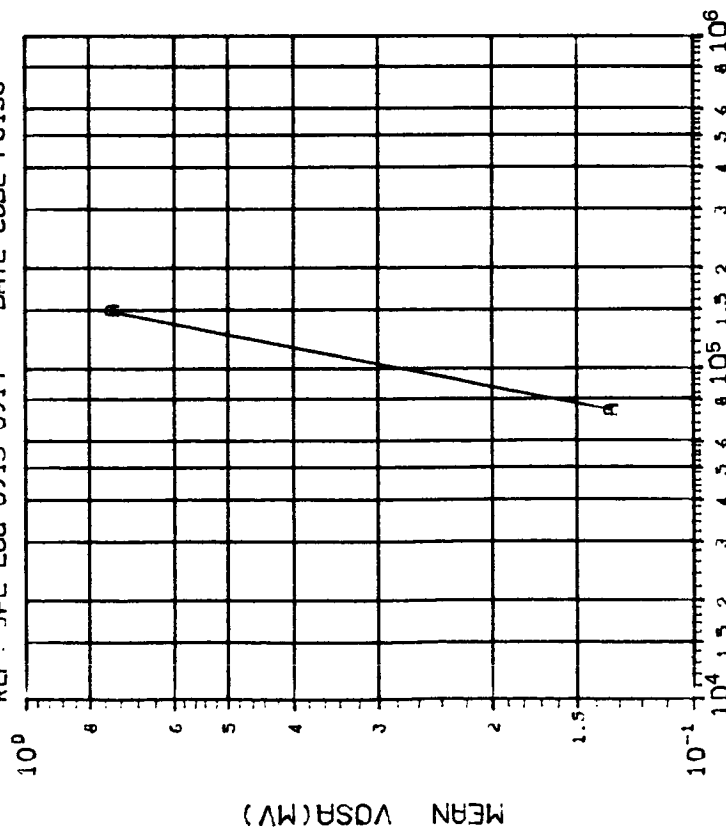
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600
	1000
	2000

INITIAL MEAN VALUE ISKD(MR) = 1.60×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

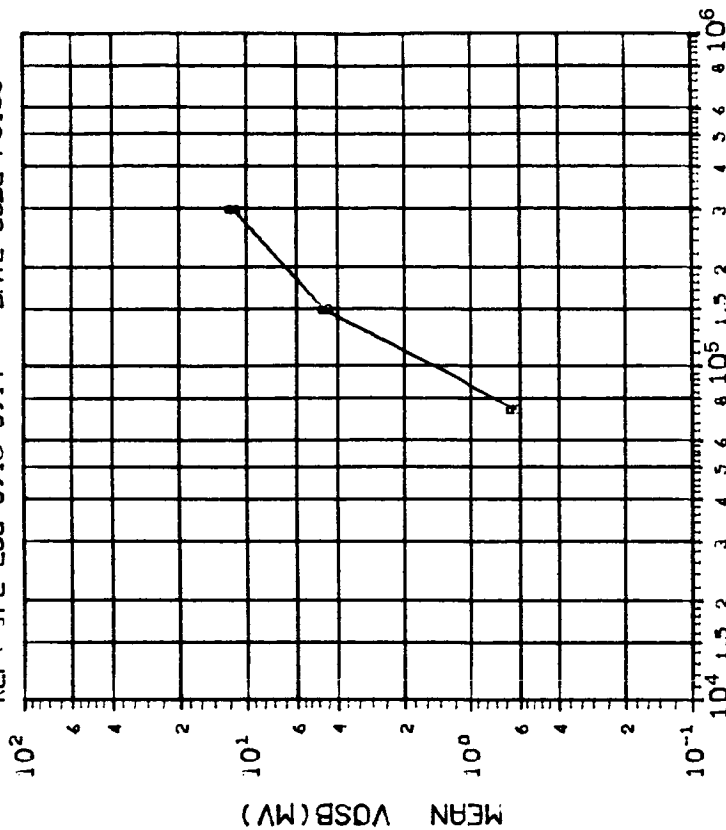
REF: JPL LOG 0915-0917 DATE CODE F8136



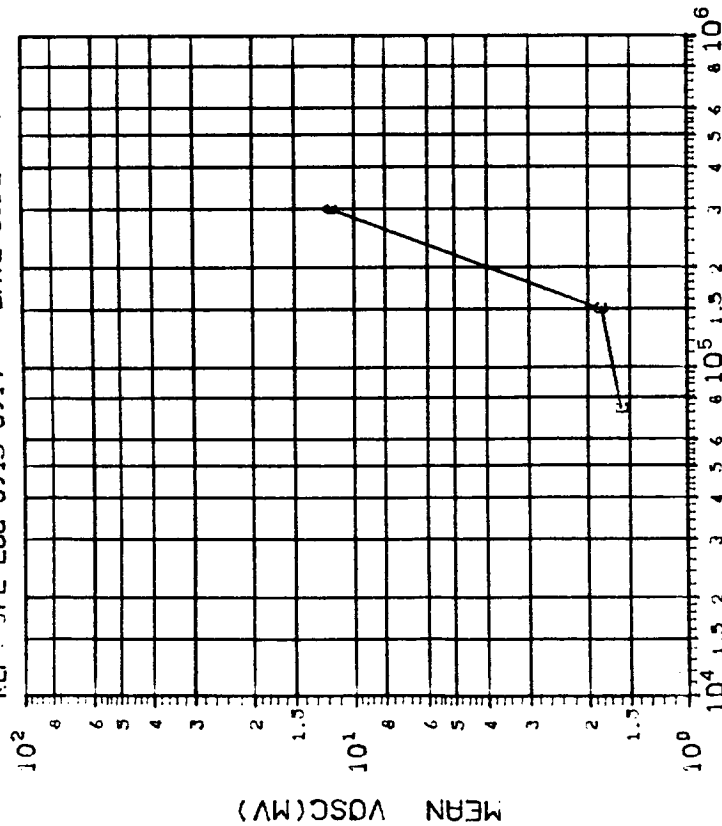
DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0915-0917 DATE CODE F8136

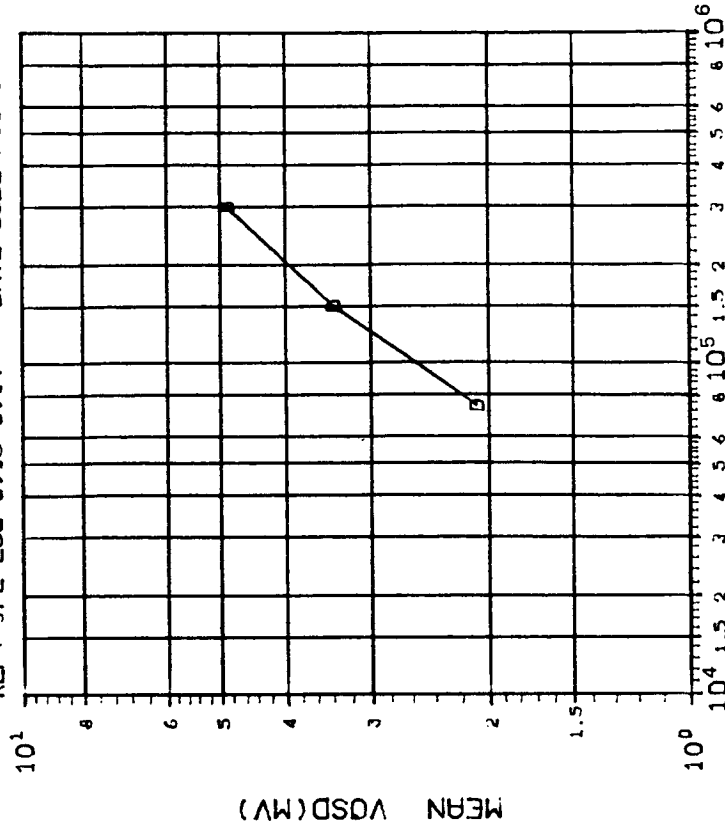


(3)VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	150
	300	600
1.500 6.472 19.60 ****		

INITIAL MEAN VALUE VOSC(MV) = 7.98×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0915-0917 DATE CODE F8136



(4)VOSD (V0=0) IN MV: VS DOSE

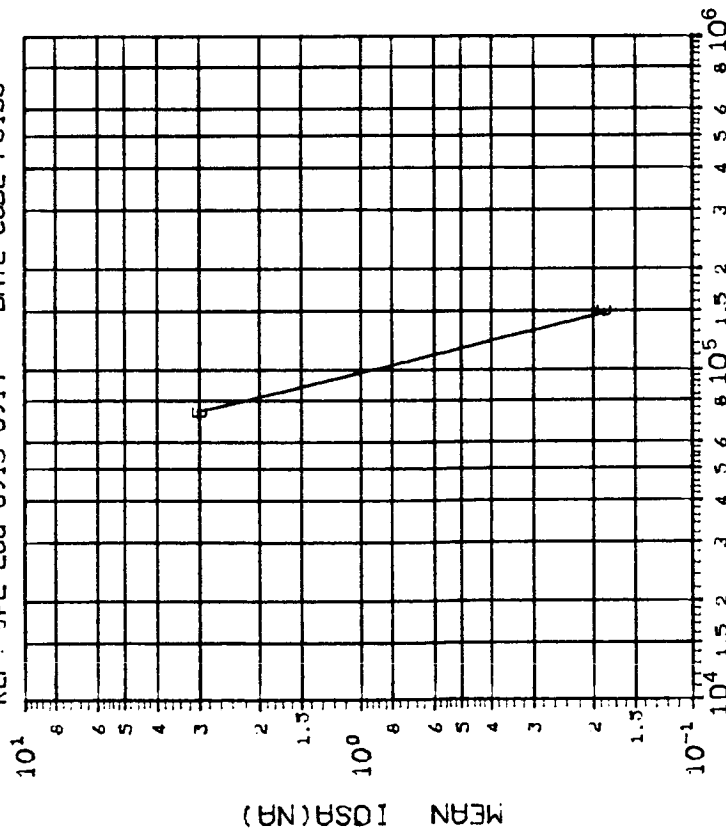
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75	150
	300	600
.9622 1.553 1.135 ****		

INITIAL MEAN VALUE VOSD(MV) = 9.74×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co 60 Gammas

(5110SA (V0=01 IN NA: VS DOSE

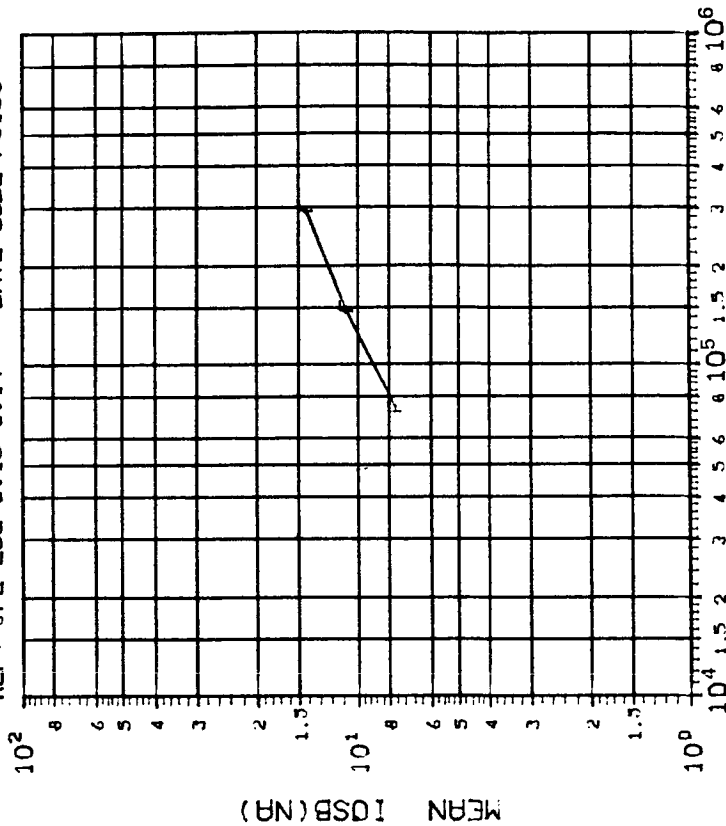
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75
	150
	300
6.565 24.68 ***	

INITIAL MEAN VALUE IOSA(NA) = 3.11X10⁻⁰

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co 60 Gammas

(6110SB (V0=01 IN NA: VS DOSE

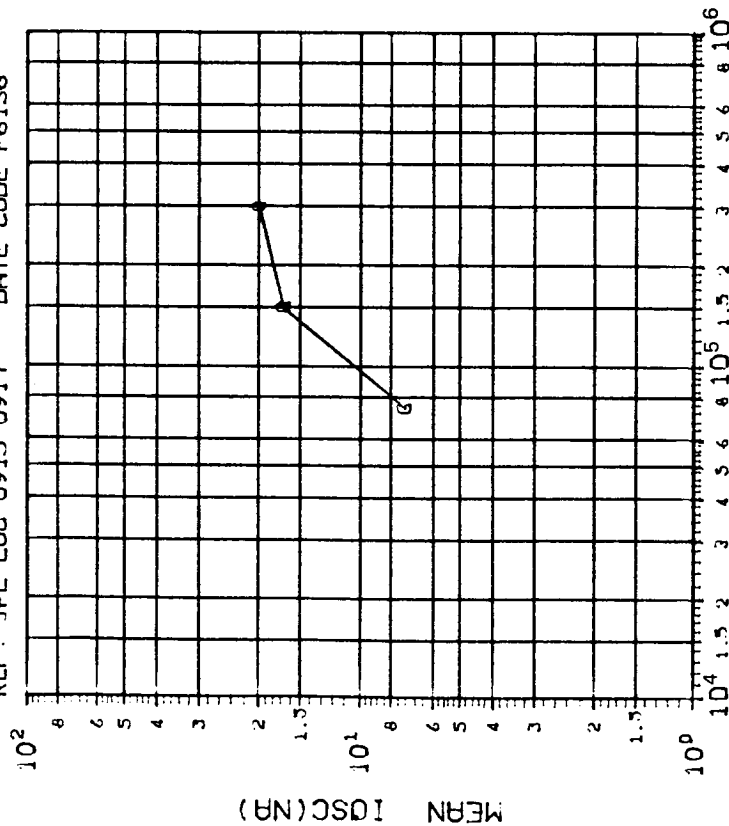
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75
	150
	300
5.347 19.61 42.38 ***	

INITIAL MEAN VALUE IOSB(NA) = 2.62X10⁻⁰

DEVICE TYPE: LM139 QUAD COMPARTOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(7)IOSC (V0=0) IN NA: VS DOSE

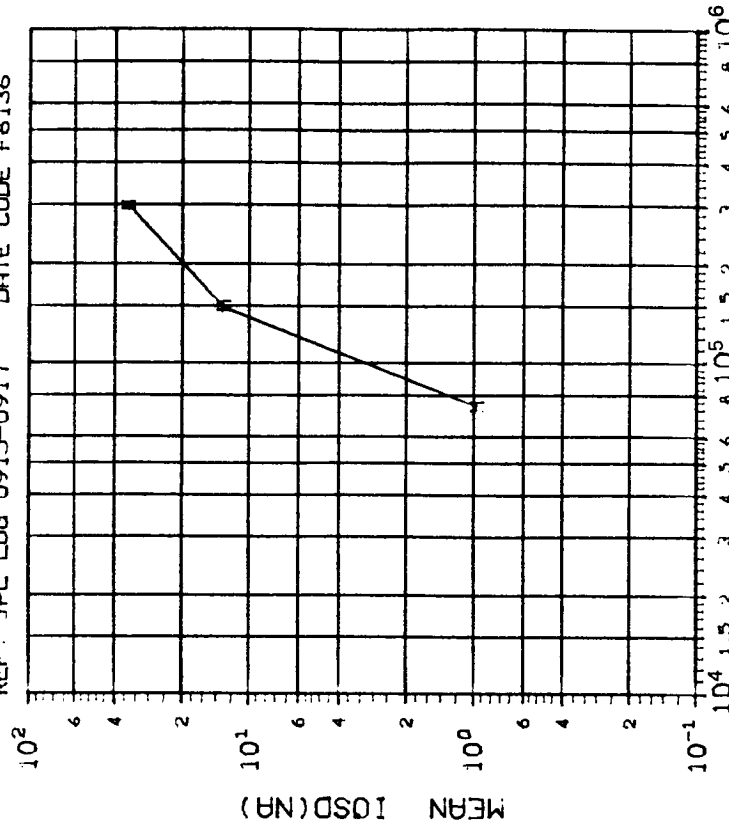
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75
	150
	300
5.136 13.57 31.62 ****	

INITIAL MEAN VALUE IOSC(NA) = 3.07X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARTOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(8)IOSD (V0=0) IN NA: VS DOSE

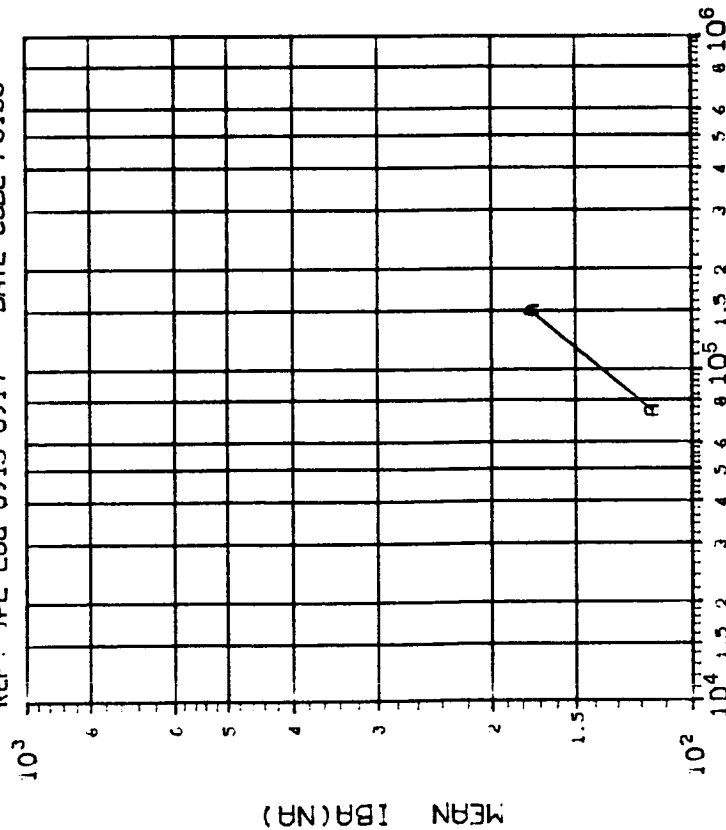
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	150
	300
7.663 15.69 22.62 ****	

INITIAL MEAN VALUE IOSD(NA) = 3.02X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARTOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



(1)1BA (V0=0) IN MV: VS DOSE

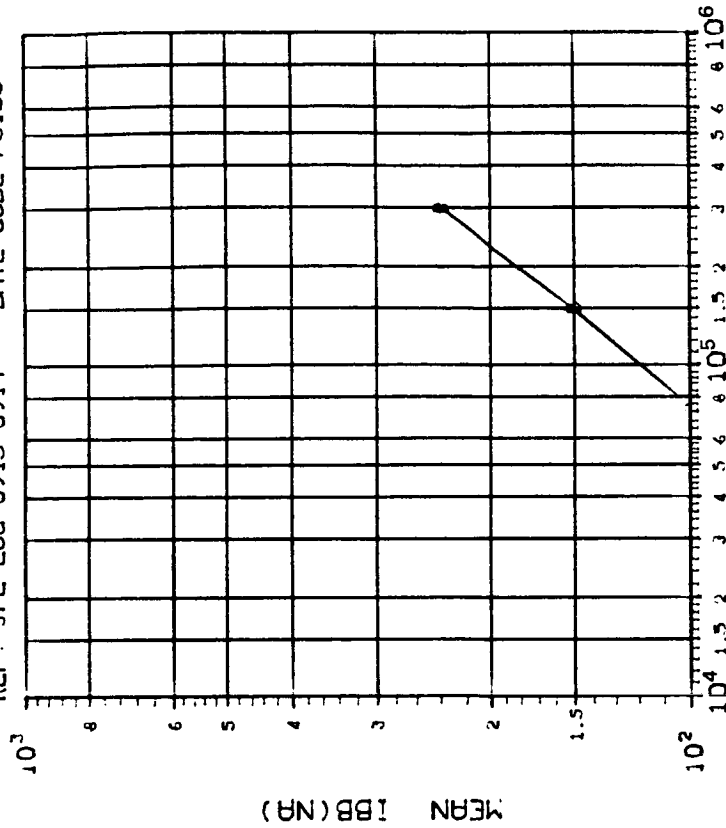
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	300
	150	600
	33.54	****

INITIAL MEAN VALUE 1BA(NA) = 2.21×10^{11}

DEVICE TYPE: LM139 QUAD COMPARTOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



(2)1BB (V0=0) IN MV: VS DOSE

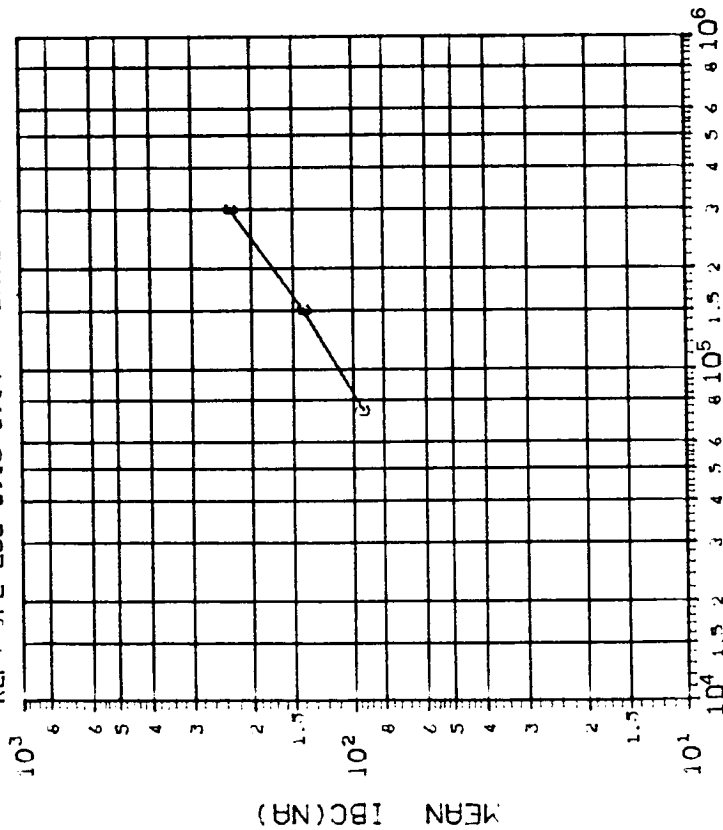
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	300
	150	600
	11.66	22.40

INITIAL MEAN VALUE 1BB(NA) = 2.21×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(311)BC (V0=0) IN MV: VS DOSE

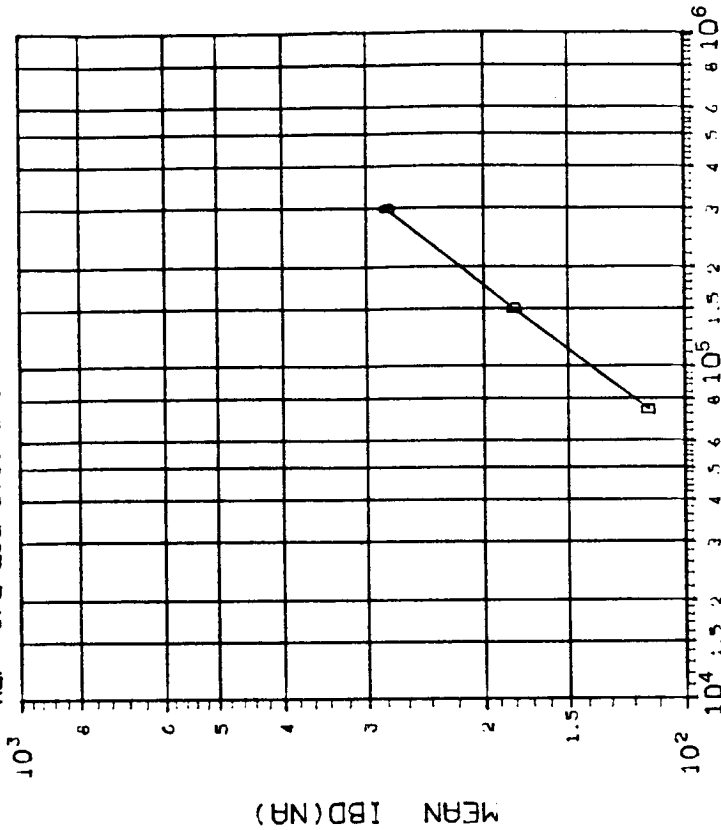
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	600
7.672 11.09 23.20 ****	

INITIAL MEAN VALUE IBC(NA) = $2.15 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(411)BD (V0=0) IN MV: VS DOSE

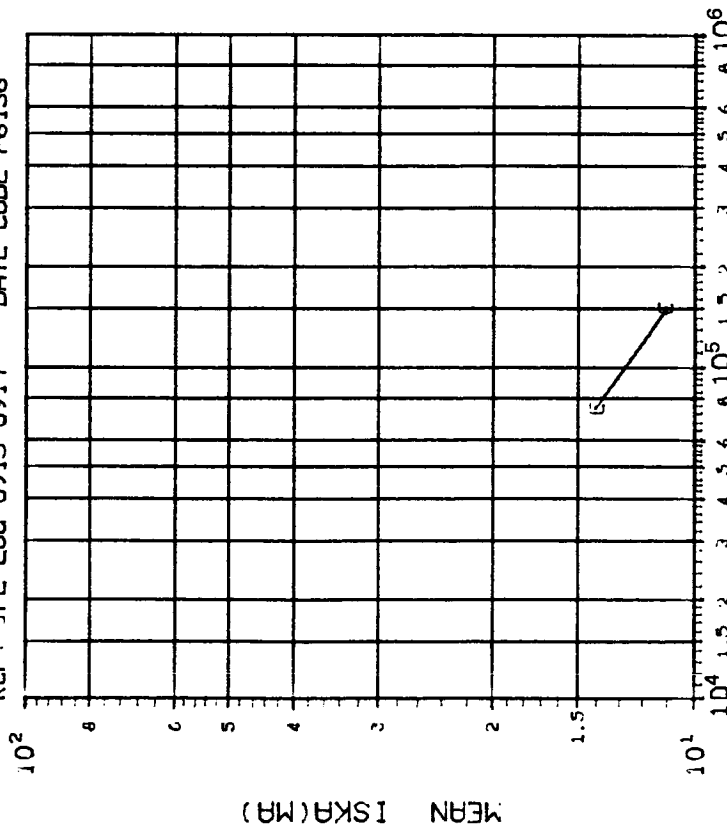
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	600
19.75 31.69 43.50 ****	

INITIAL MEAN VALUE IBD(NA) = $2.08 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0913-0917 DATE CODE F8136



(5) ISKA (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

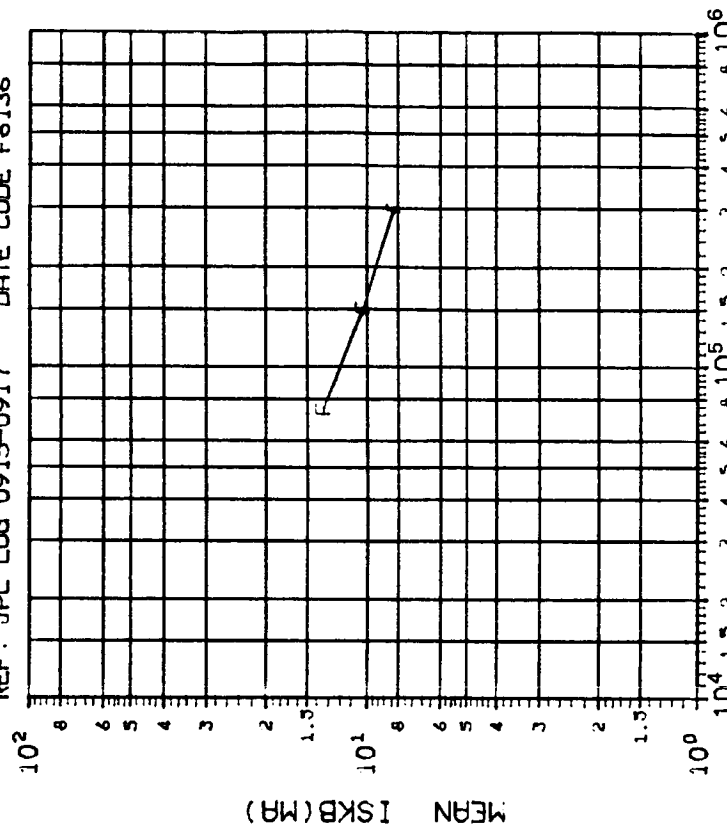
TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
E	2.715	3.340	****

INITIAL MEAN VALUE ISKA(MA) = $2.17 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0913-0917 DATE CODE F8136



(6) ISKB (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

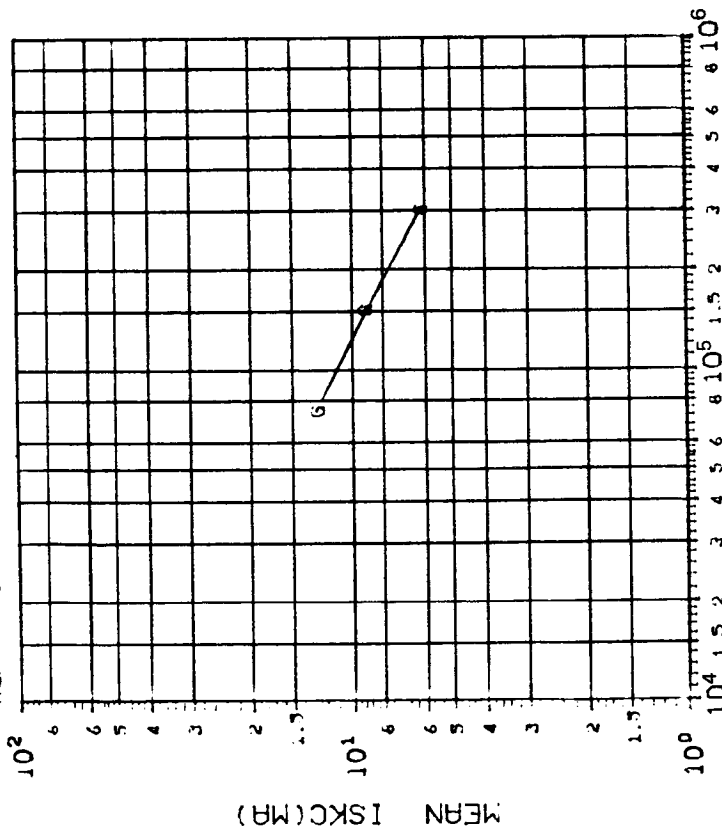
TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
F	3.336	3.623	3.761

INITIAL MEAN VALUE ISKB(MA) = $2.21 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



DOSE, rad(Si) Co ⁶⁰ Gammas

(7) ISKC (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

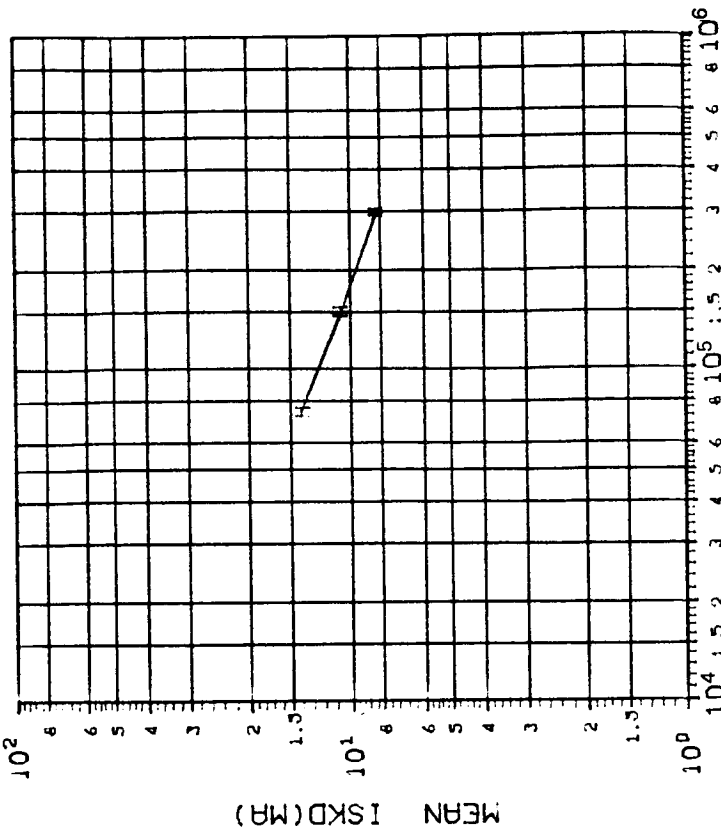
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
G	75	150
	300	600
	2.865	3.203

INITIAL MEAN VALUE ISKC(MA) = 2.10X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0915-0917 DATE CODE F8136



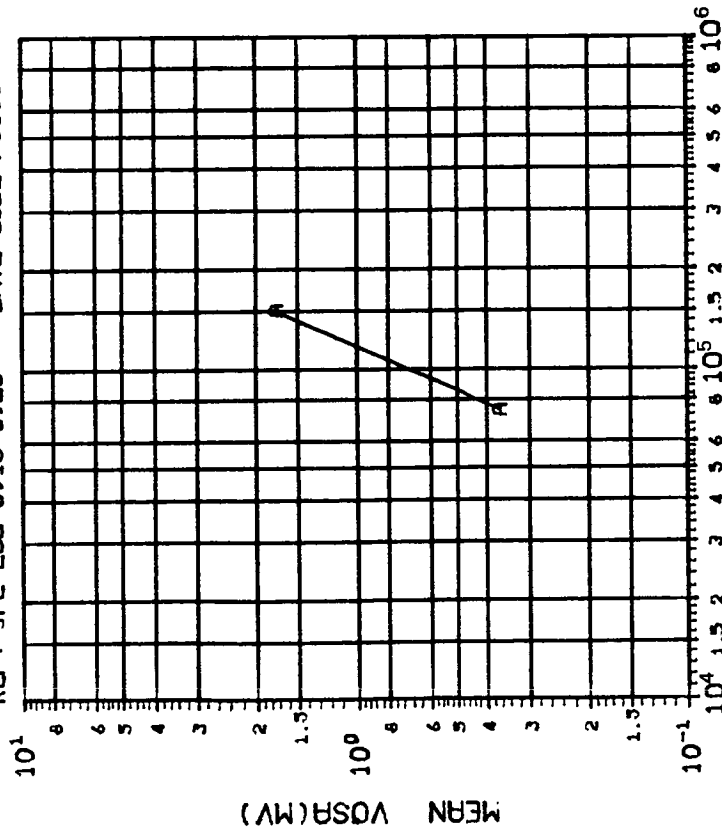
DOSE, rad(Si) Co ⁶⁰ Gammas

(8) ISKD (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
H	75	150
	300	600
	2.307	2.936

INITIAL MEAN VALUE ISKD(MA) = 2.09X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



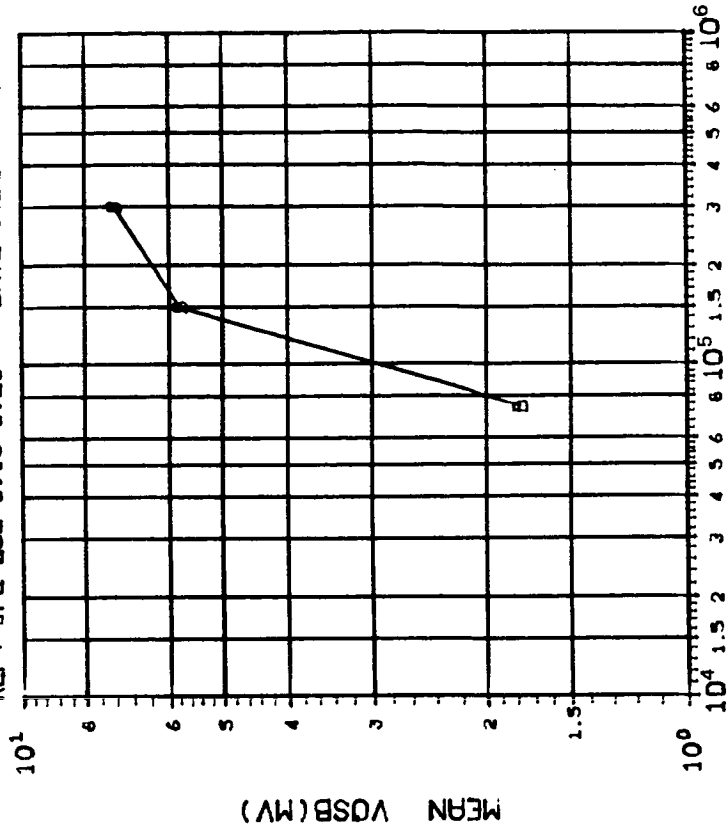
DOSE, rads(Si) Co 60 Gammas

(1) VOSA ($V_0=0$) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	1.309 9.764 ****

INITIAL MEAN VALUE VOSA(MV) = 8.20×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



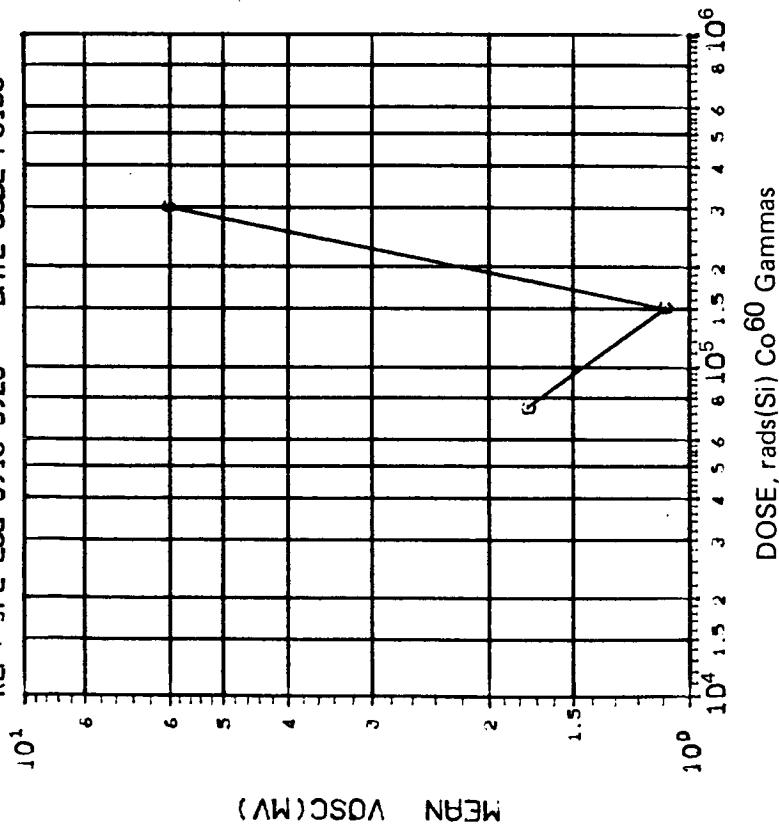
DOSE, rads(Si) Co 60 Gammas

(2) VOSB ($V_0=0$) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	2.666 5.804 12.20

INITIAL MEAN VALUE VOSB(MV) = 7.27×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136

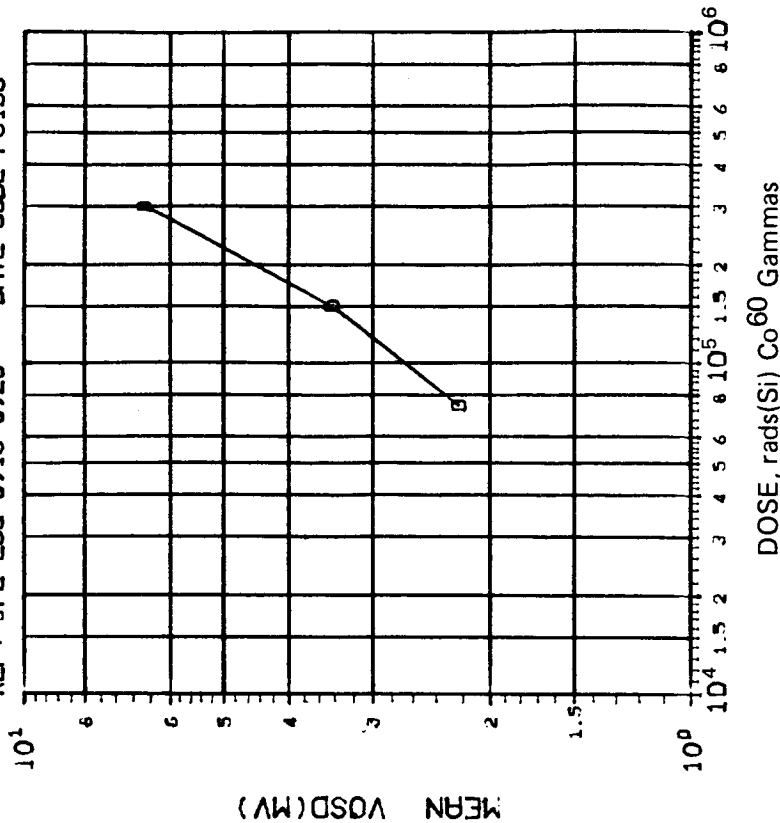


(3) VOSC (V_O=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	300
	5.539	19.63
	41.67	

INITIAL MEAN VALUE VOSC(MV) = 6.58X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



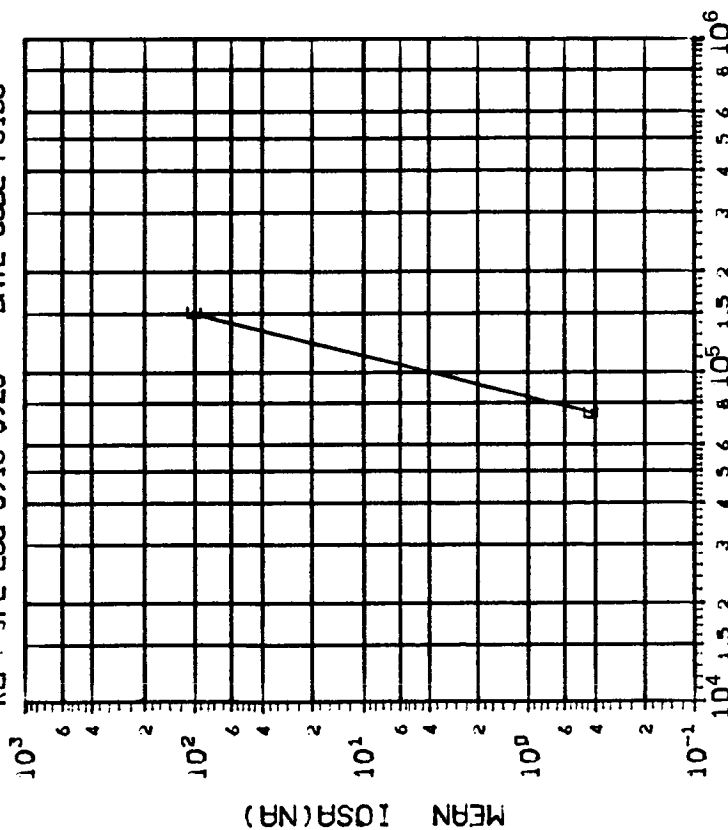
(4) VOSD (V_O=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75	300
	.6995	1.141
	3.906	

INITIAL MEAN VALUE VOSD(MV) = 9.45X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC TEST DATE 02-09-83
REF: JPL LOG 0918-0920 DATE CODE F8136



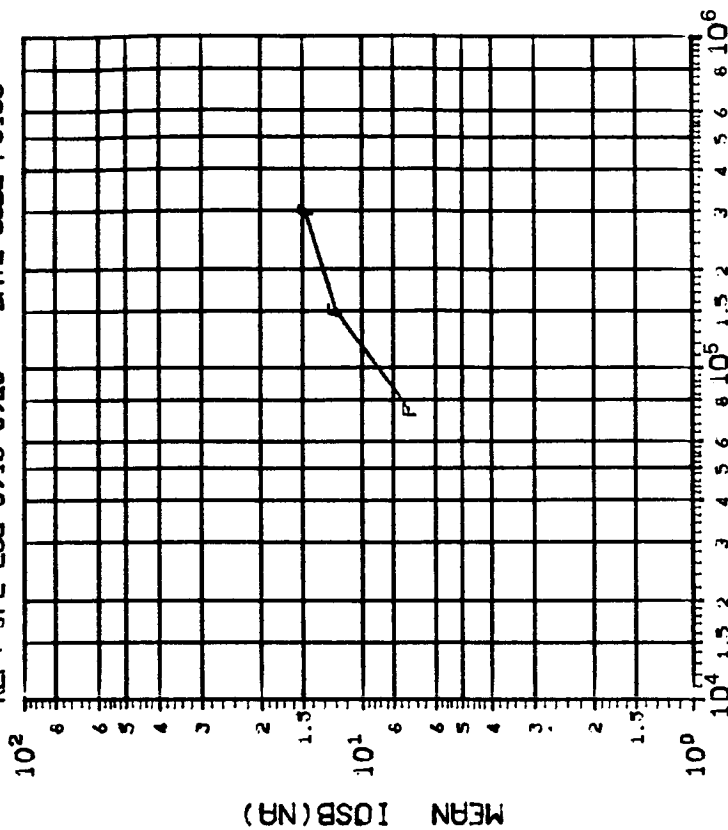
(5110SA (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75
	150
	300
18.18 190.7 ***	

INITIAL MEAN VALUE IOSA(NA) = 2.65X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC TEST DATE 02-09-83
REF: JPL LOG 0918-0920 DATE CODE F8136



(6110SB (VO=0) IN NA: VS DOSE

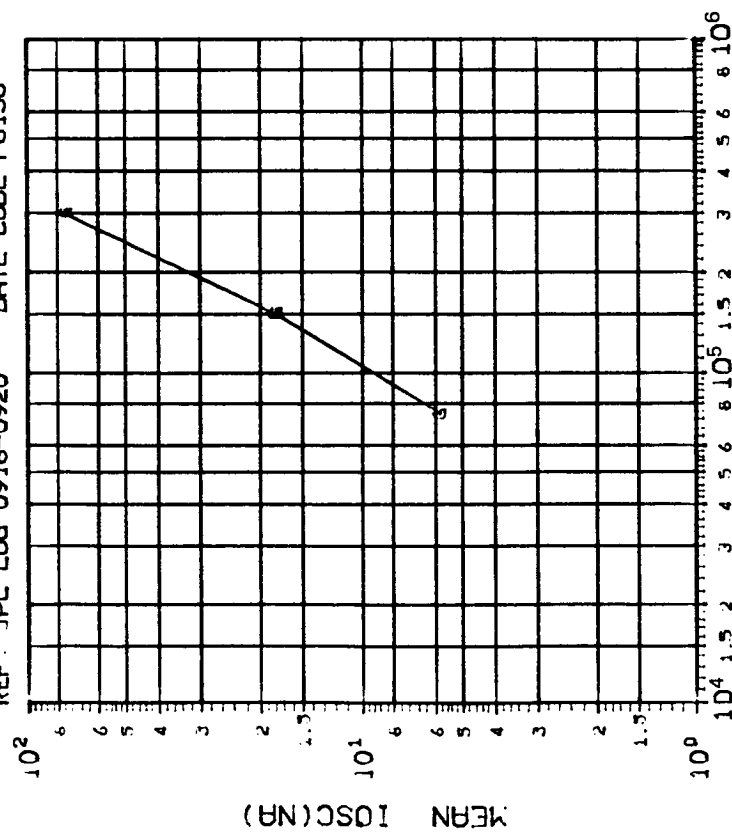
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75
	150
	300
6.818 16.00 40.73	

INITIAL MEAN VALUE IOSB(NA) = 2.21X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0918-0920 DATE CODE F8136



DOSE, rads(Si) Co 60 Gammas

(7)IOSC (VO=0) IN NA: VS DOSE

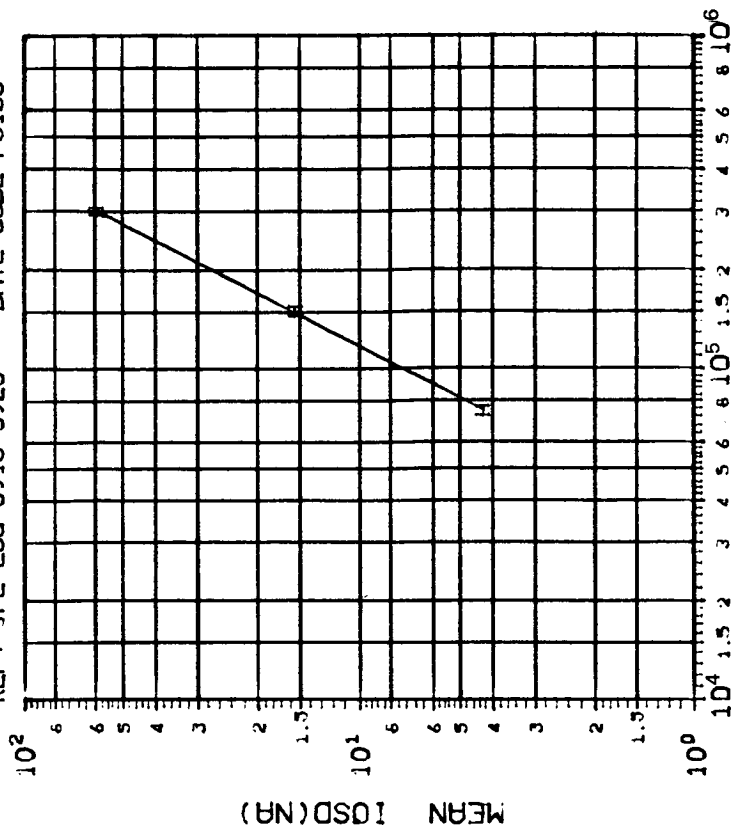
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
G	75	300
	20.32	123.9

INITIAL MEAN VALUE IOSC(NA) = 3.34X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0918-0920 DATE CODE F8136



DOSE, rads(Si) Co 60 Gammas

(8)IOSD (VO=0) IN NA: VS DOSE

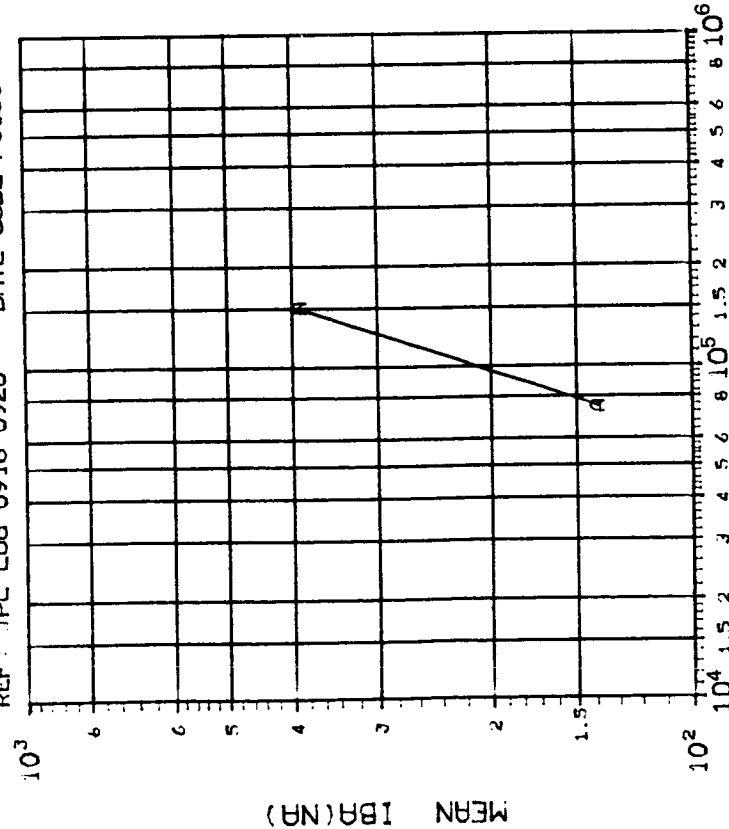
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
H	75	300
	4.696	27.56

INITIAL MEAN VALUE IOSD(NA) = 2.77X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0918-0920 DATE CODE F8136



MEAN IBR (NA)

DOSE, rads(Si) Co 60 Gammas

(1)IBR (VO=0) IN NA: VS DOSE

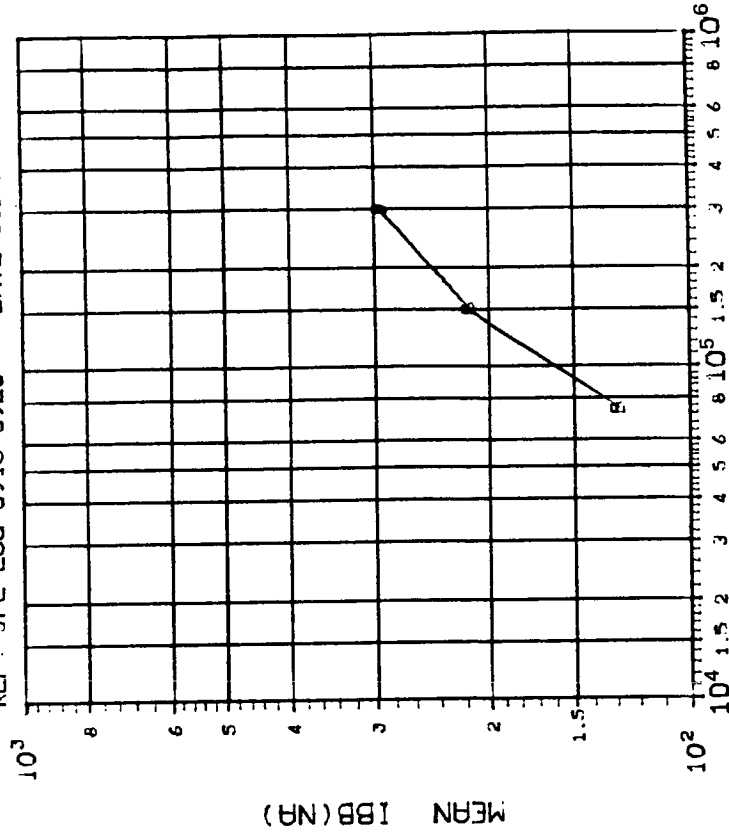
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
41.75 249.2 ****	

INITIAL MEAN VALUE IBR(NA) = 2.26X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0918-0920 DATE CODE F8136



MEAN IBB (NA)

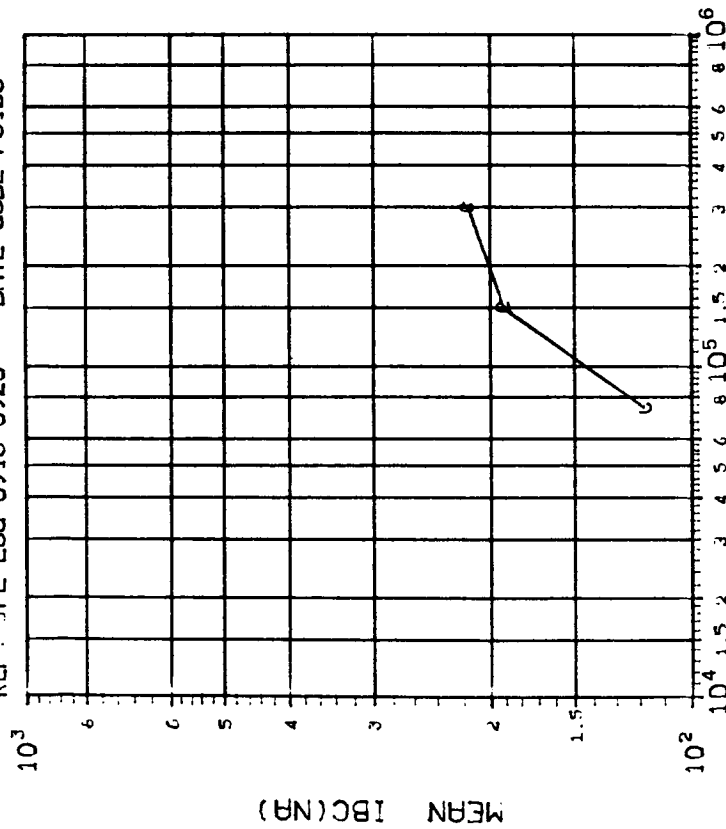
DOSE, rads(Si) Co 60 Gammas

(2)IBB (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
18.63 42.05 146.7	

INITIAL MEAN VALUE IBB(NA) = 2.14X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



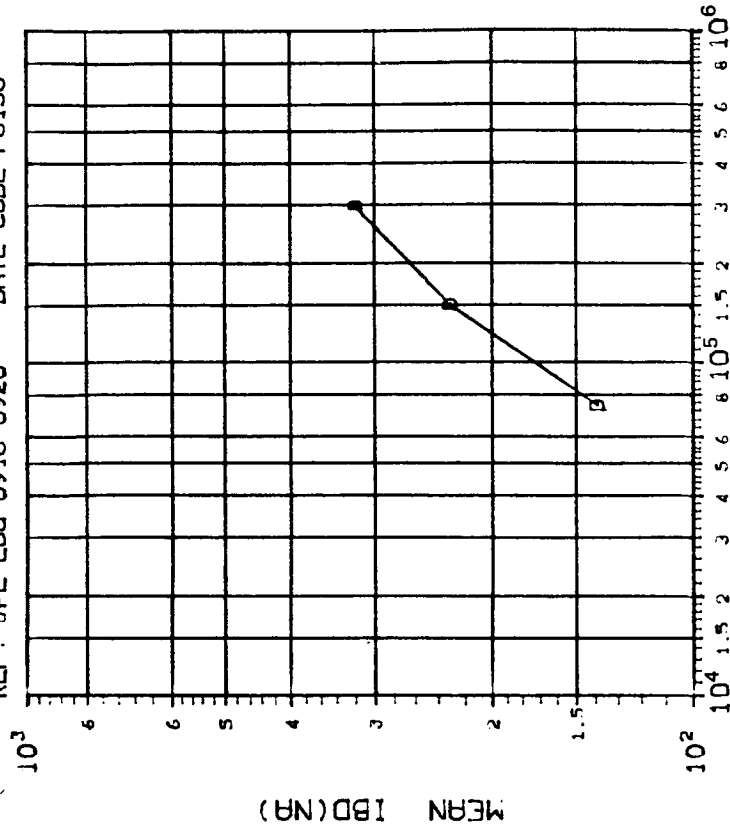
DOSE, rads(Si) Co⁶⁰ Gammas

(3) IBC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
17.48 41.99 204.3	

INITIAL MEAN VALUE IBC(NA) = $2.16 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: FSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0918-0920 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(4) IBD (V0=0) IN NA: VS DOSE

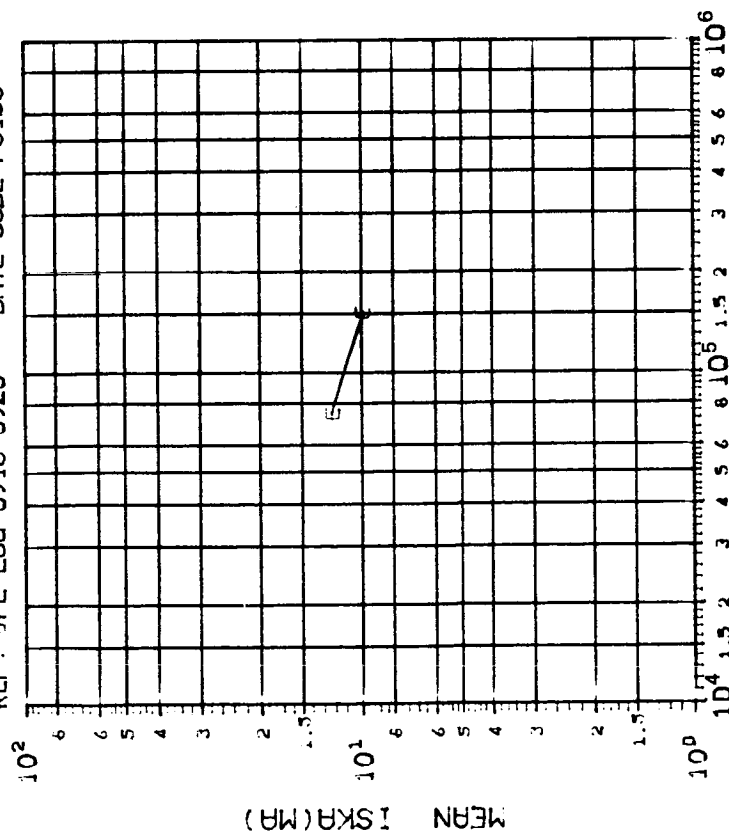
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
23.59 36.93 93.59	

INITIAL MEAN VALUE IBD(NA) = $2.09 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0918-0920 DATE CODE F8136



(5) ISKA (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

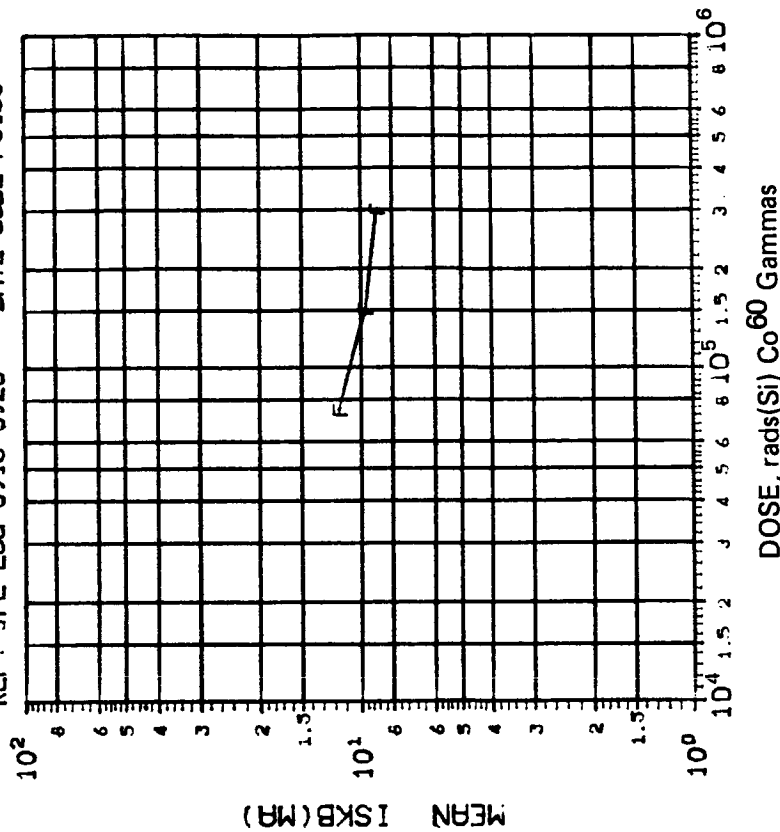
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	2.559 4.699 ****

INITIAL MEAN VALUE ISKA(MA) = $1.97 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0918-0920 DATE CODE F8136



(6) ISKB (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

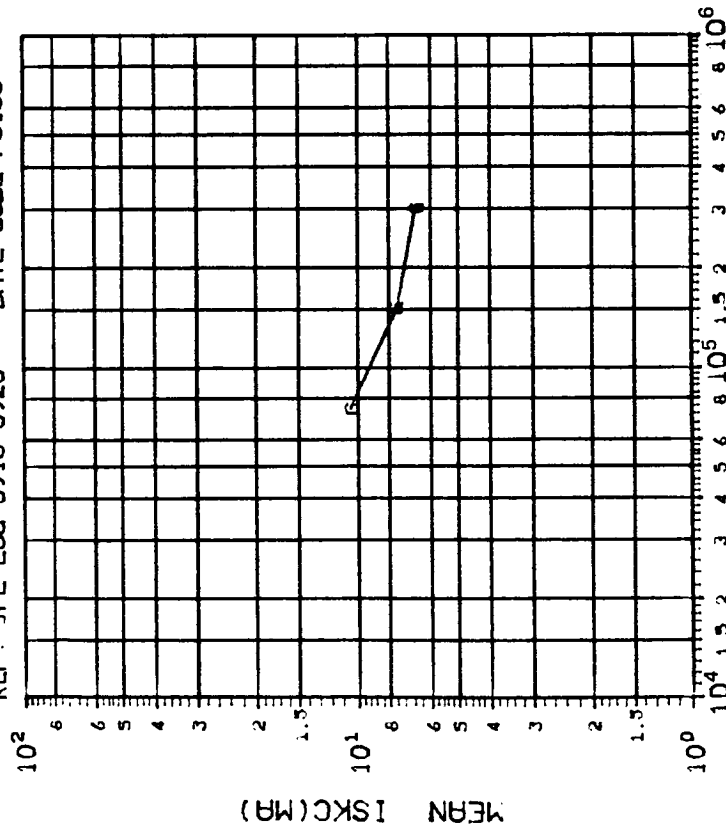
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	2.960 3.609 4.430

INITIAL MEAN VALUE ISKB(MA) = $1.95 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0918-0920 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(7)ISKC (V0=-V+1.5V,VIN=-100MV) IN VS DOSE

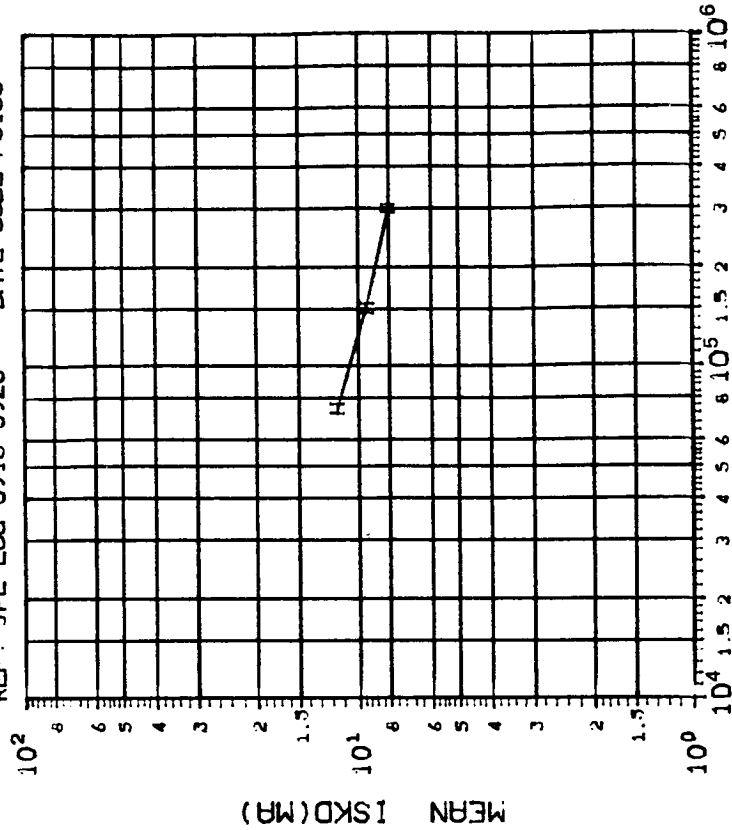
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
G	75	300
	2.025	2.467 3.152

INITIAL MEAN VALUE ISKC(MA) = 1.91X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: FSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0918-0920 DATE CODE F8136



DOSE, rads(Si) Co⁶⁰ Gammas

(8)ISKD (V0=-V+1.5V,VIN=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
H	75	300
	2.072	2.524 2.994

INITIAL MEAN VALUE ISKD(MA) = 1.85X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308

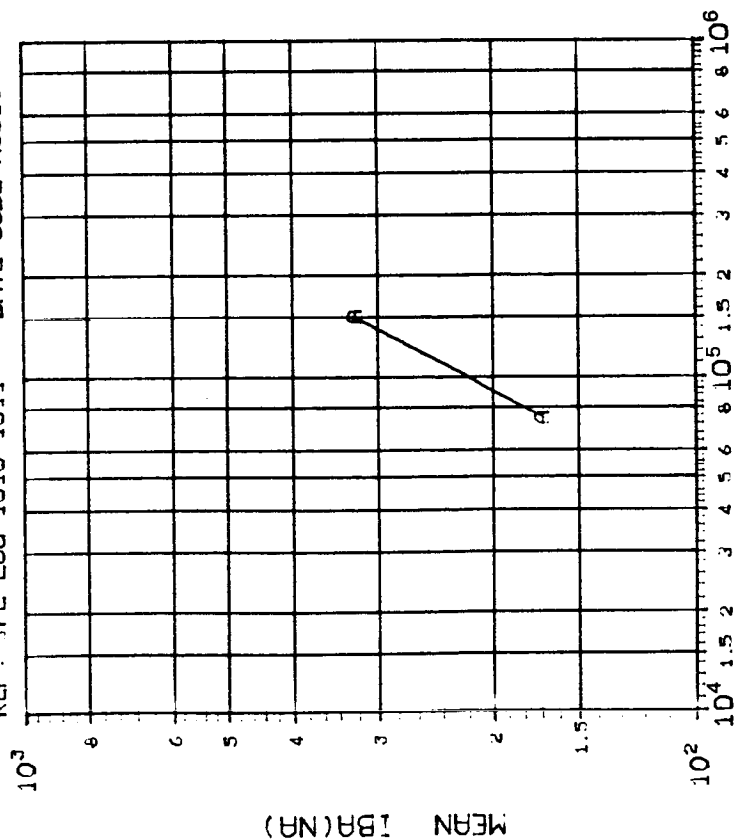


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
62.33 198.0 ***	

INITIAL MEAN VALUE IBA(NA) = $1.40 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308

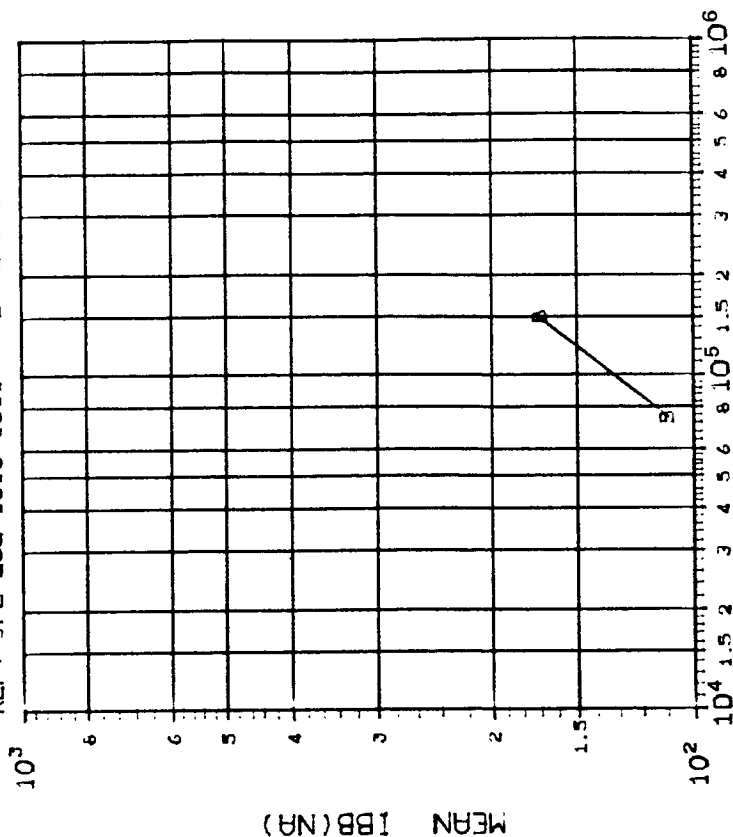


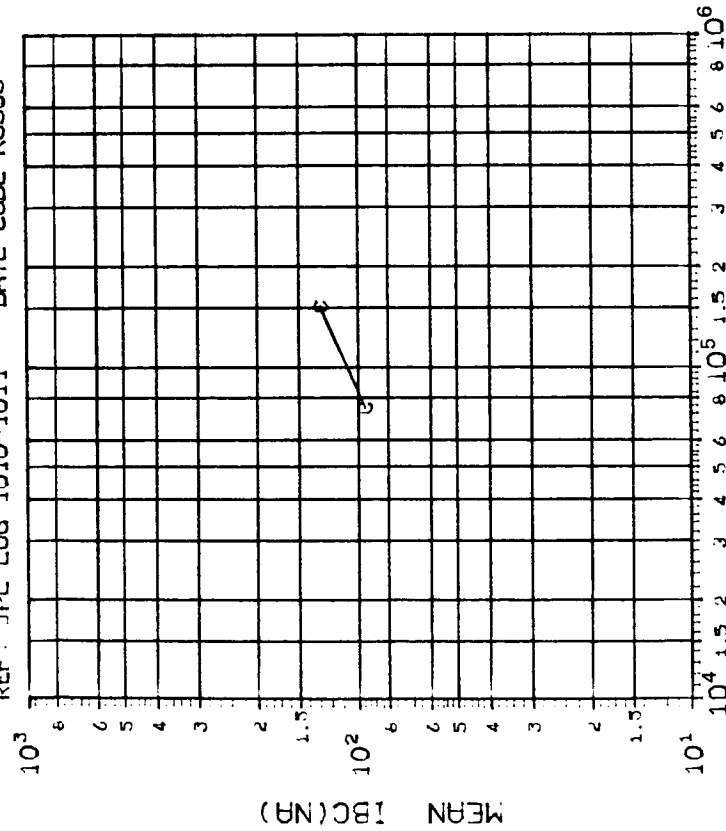
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
46.62 87.99 ****	

INITIAL MEAN VALUE IBB(NA) = $1.43 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308



DOSE, rads(Si) 2.5 MeV electrons

(3)IBC (V0=0) IN MA: VS DOSE

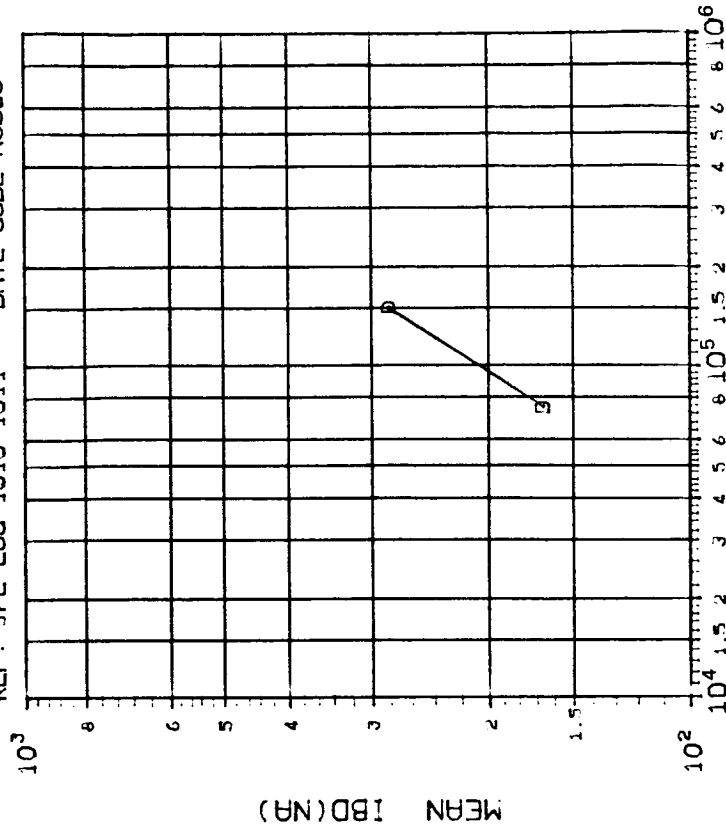
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
C	32.52	46.02 ****

INITIAL MEAN VALUE IBC(NA) = 1.43X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308



DOSE, rads(Si) 2.5 MeV electrons

(4)IBD (V0=0) IN MA: VS DOSE

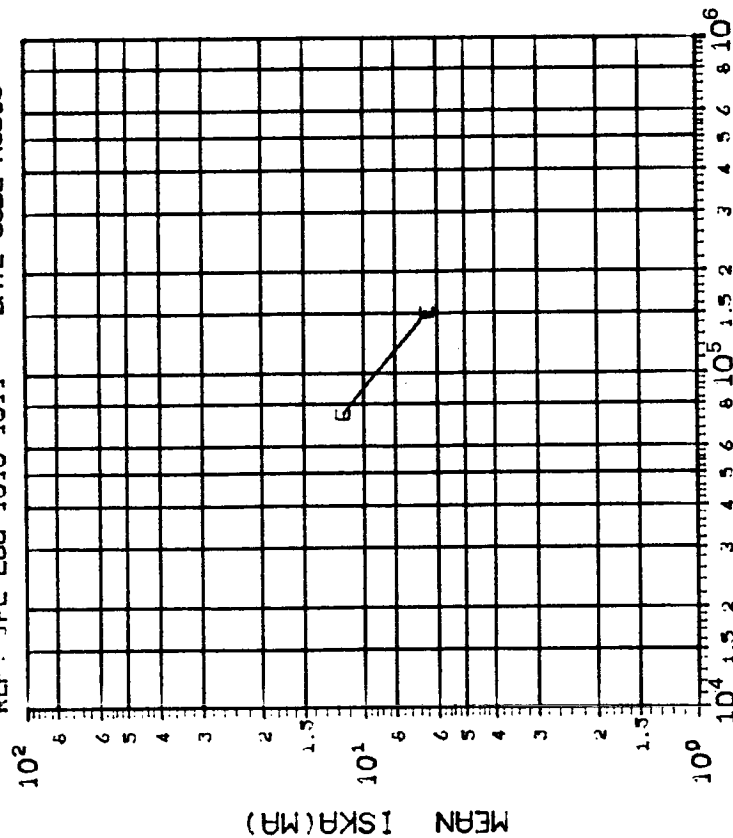
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
D	64.41	172.5 ****

INITIAL MEAN VALUE IBD(NA) = 1.37X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308



DOSE, rads(Si) 2.5 MeV electrons

(5) ISKA ($V_0 = -V + 1.5V$, $V_{IN} = -100mV$) IN VS DOSE

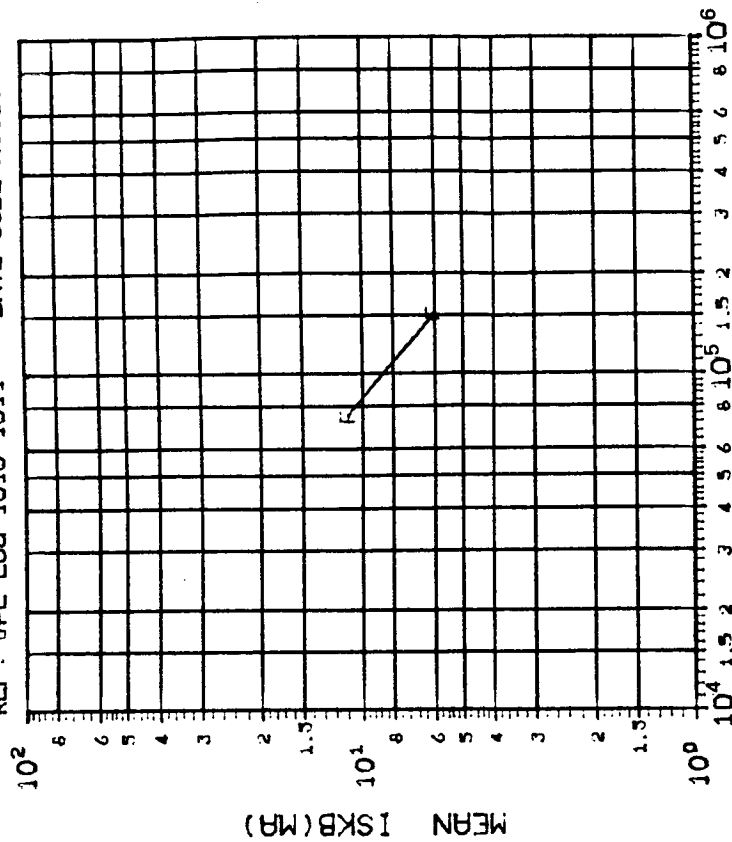
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
E	4.637	4.698 ****

INITIAL MEAN VALUE ISKA(MA) = $2.81 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308



DOSE, rads(Si) 2.5 MeV electrons

(6) ISKB ($V_0 = -V + 1.5V$, $V_{IN} = -100mV$) IN VS DOSE

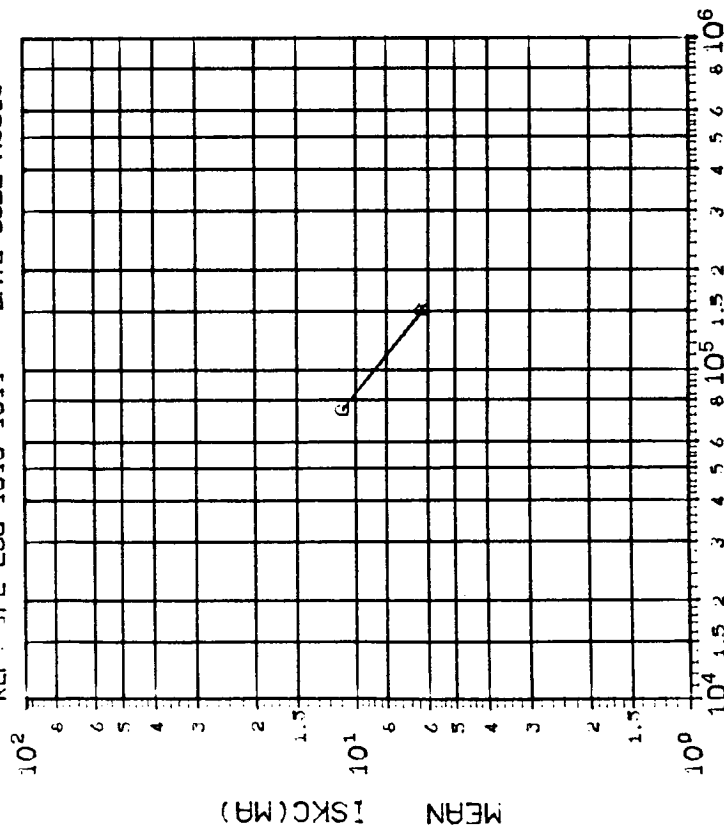
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
F	4.396	4.496 ****

INITIAL MEAN VALUE ISKB(MA) = $2.80 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308



DOSE, rads(Si) 2.5 MeV electrons

(7)ISK (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

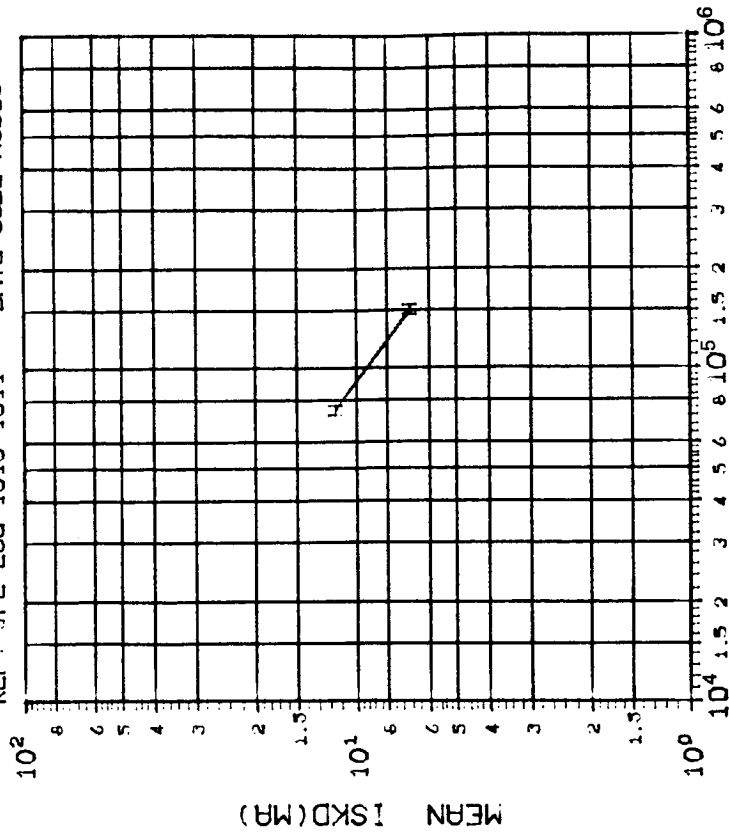
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75
	150
	300
3.862 4.006 ****	

INITIAL MEAN VALUE ISK(MA) = 2.75X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-24-83

REF: JPL LOG 1010-1011 DATE CODE K8308



DOSE, rads(Si) 2.5 MeV electrons

(8)ISKD (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

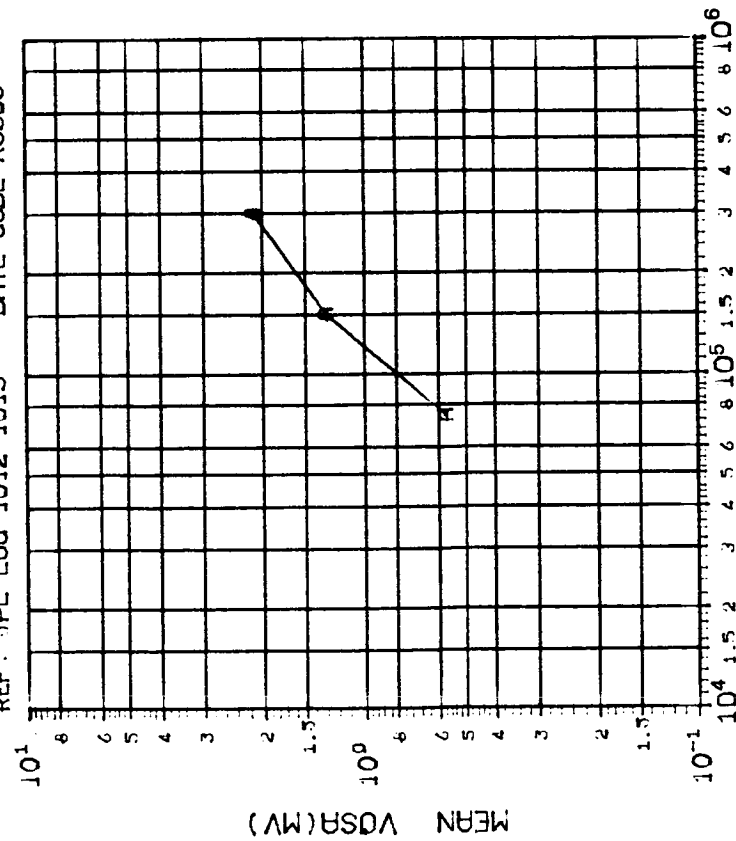
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	150
	300
3.966 4.216 ****	

INITIAL MEAN VALUE ISKD(MA) = 2.74X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

(1) VQSA (VO=OV) IN MV: VS DOSE

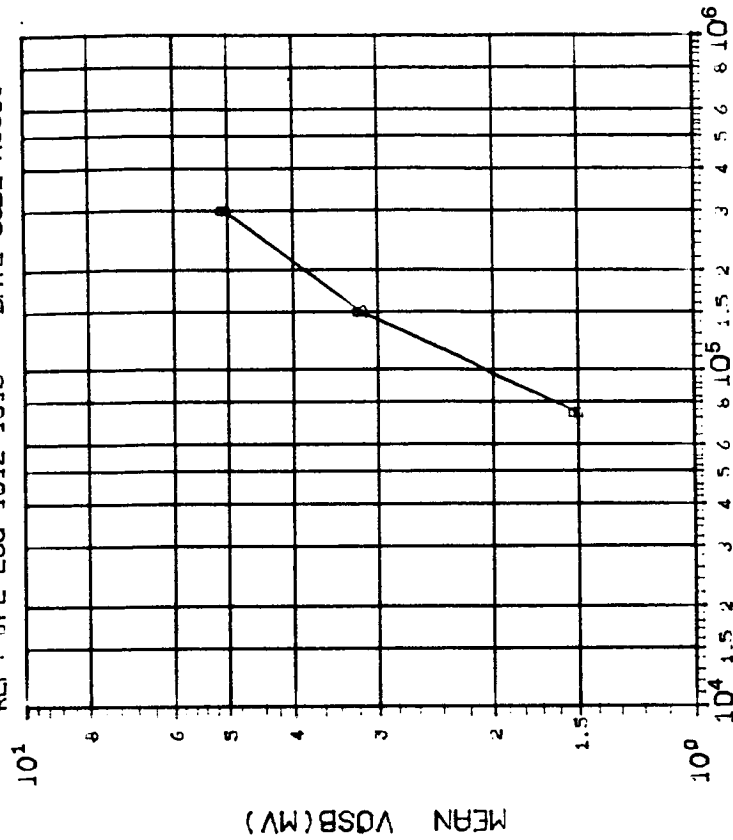
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
.7690 1.150 2.176	

INITIAL MEAN VALUE VQSA(MV) = 2.98X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

(2) VQSB (VO=OV) IN MV: VS DOSE

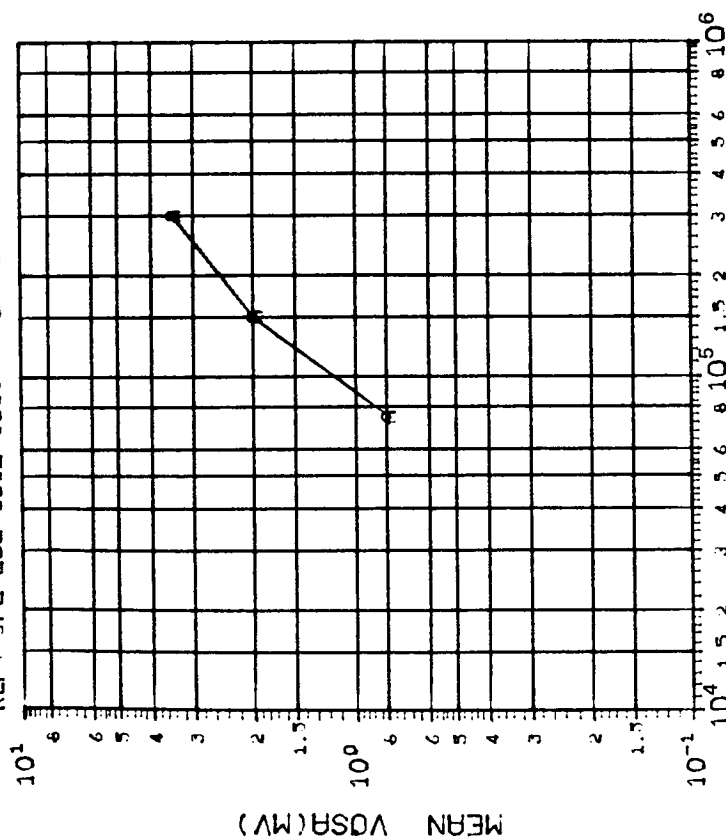
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
1.285 2.103 4.411	

INITIAL MEAN VALUE VQSB(MV) = 7.84X10⁻²

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

(1)VOSA (V0=0V) IN MV: VS DOSE

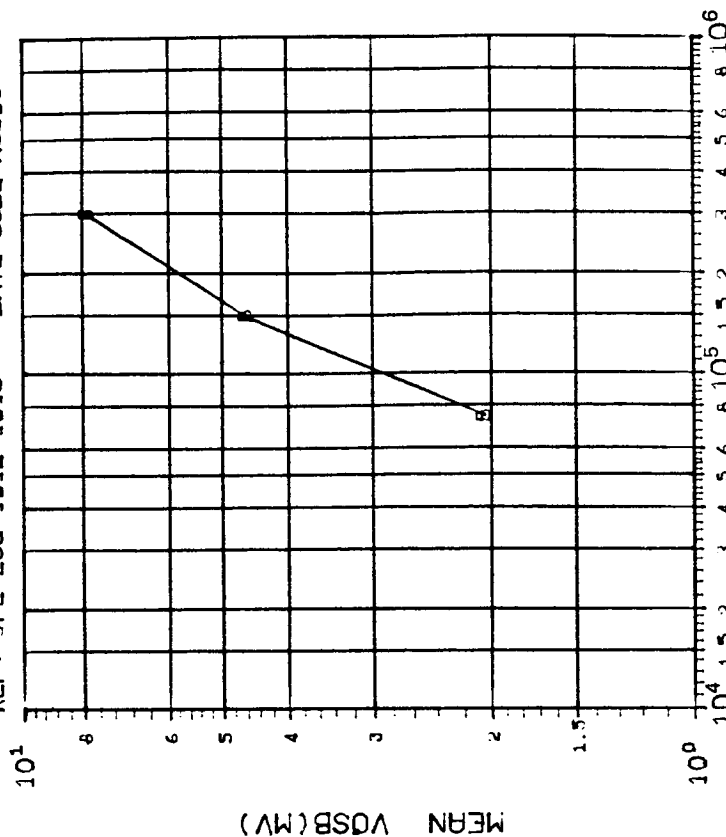
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
1.099 1.706 2.613	

INITIAL MEAN VALUE VOSA(MV) = 1.27X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

(2)VOSB (V0=0V) IN MV: VS DOSE

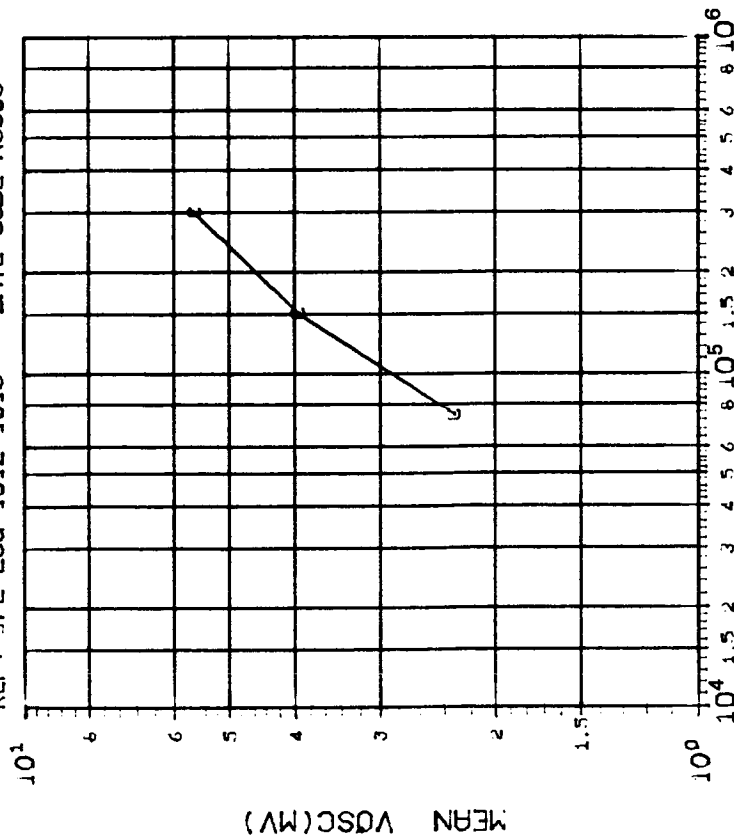
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
.6440 2.255 4.983	

INITIAL MEAN VALUE VOSB(MV) = 2.11X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

(3)VQSC (V0=0V) IN MV: VS DOSE

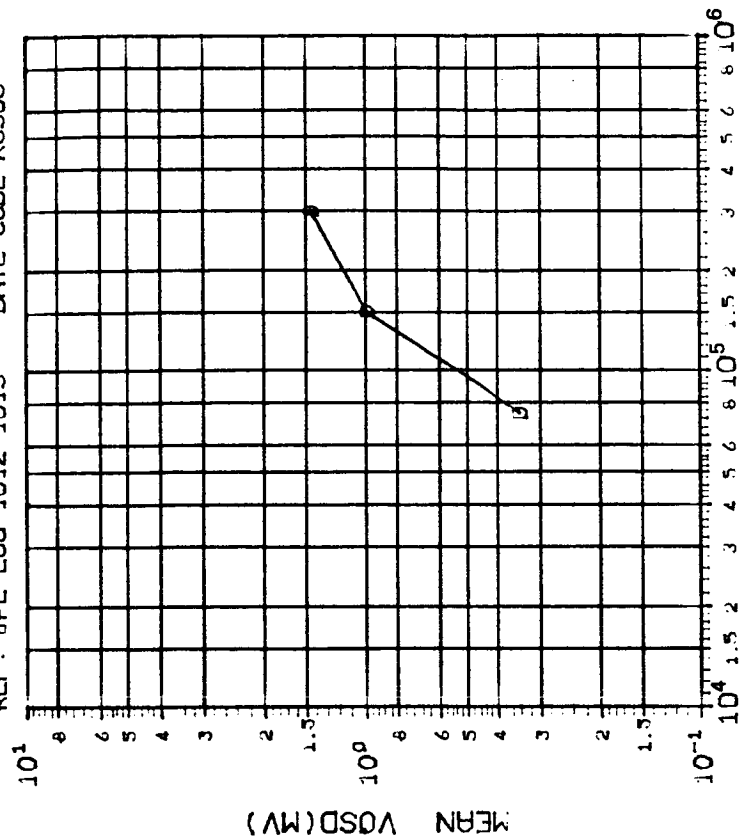
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	1.690 2.515 3.957

INITIAL MEAN VALUE VQSC(MV) = 6.41×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

(4)VQSD (V0=0V) IN MV: VS DOSE

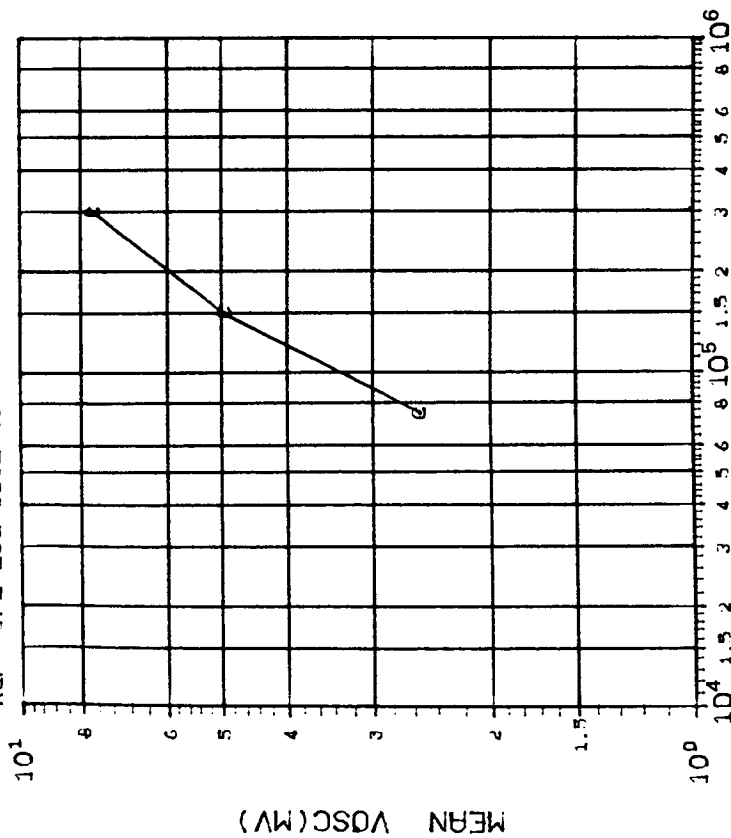
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75 150 300
	1.510 1.986 2.986

INITIAL MEAN VALUE VQSD(MV) = 1.49×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rad(Si) Co⁶⁰ Gammas

(3) VOSC (V₀=0V) IN MV: VS DOSE

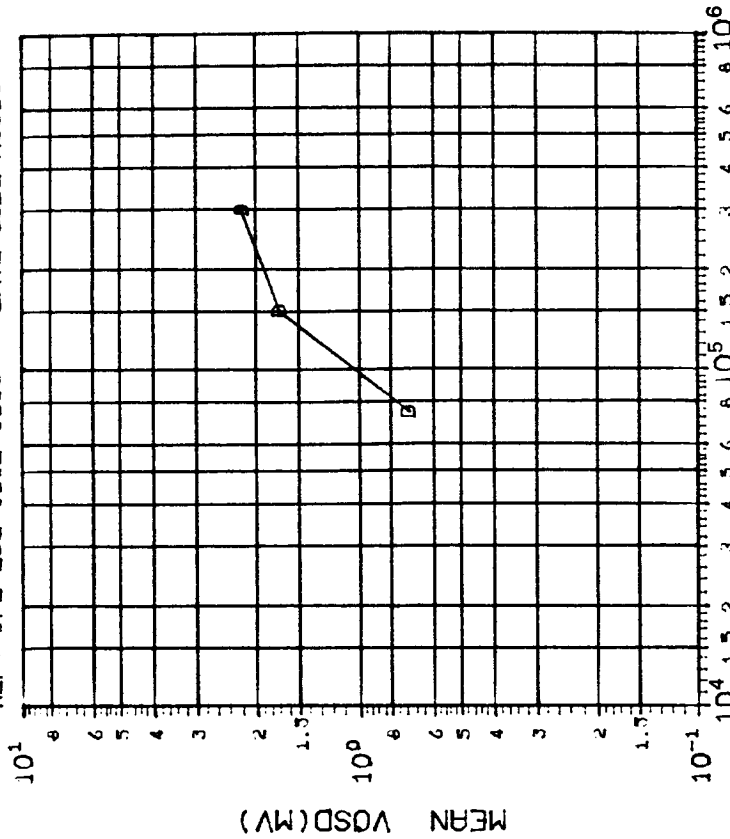
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
1.608 2.967 4.909	

INITIAL MEAN VALUE VOSC(MV) = 1.43×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rad(Si) Co⁶⁰ Gammas

(4) VOSD (V₀=0V) IN MV: VS DOSE

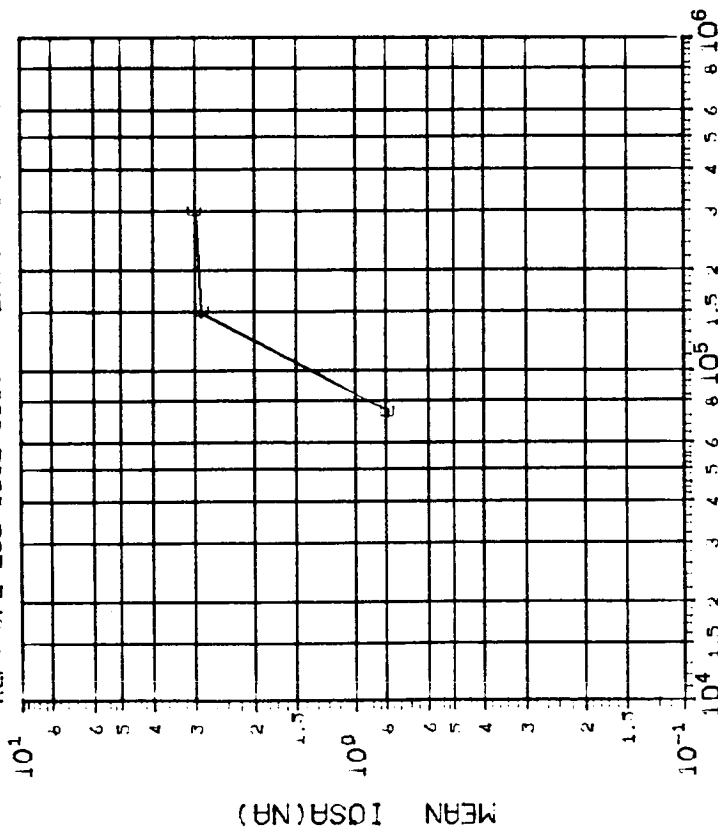
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
1.045 1.516 1.653	

INITIAL MEAN VALUE VOSD(MV) = 6.77×10^{-2}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

(5)IOSA (V0=0V) IN NA: VS DOSE

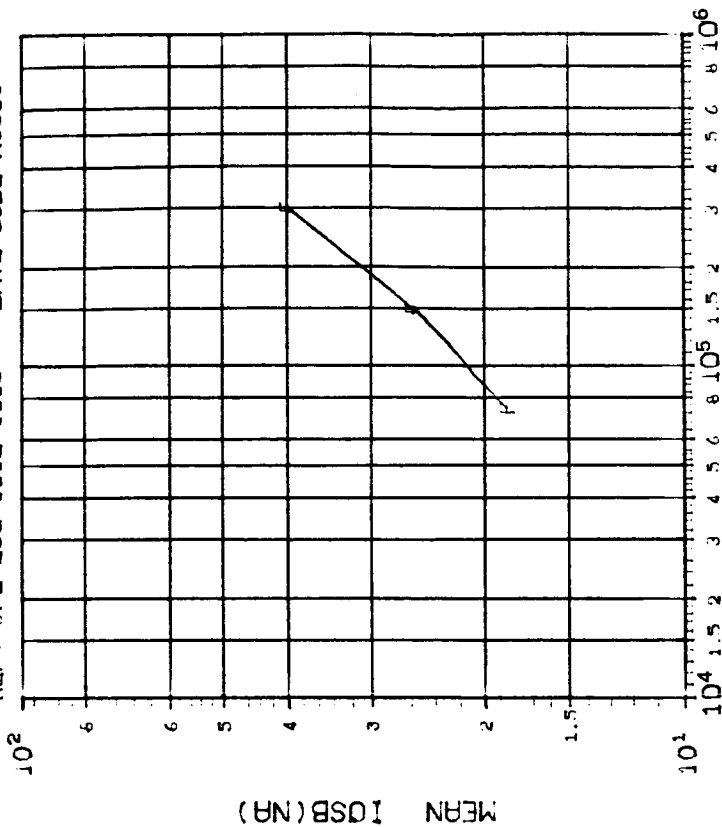
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
E	75	150
	4.430	7.631
10.68		

INITIAL MEAN VALUE IOSA(NA) = 5.21X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83

REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

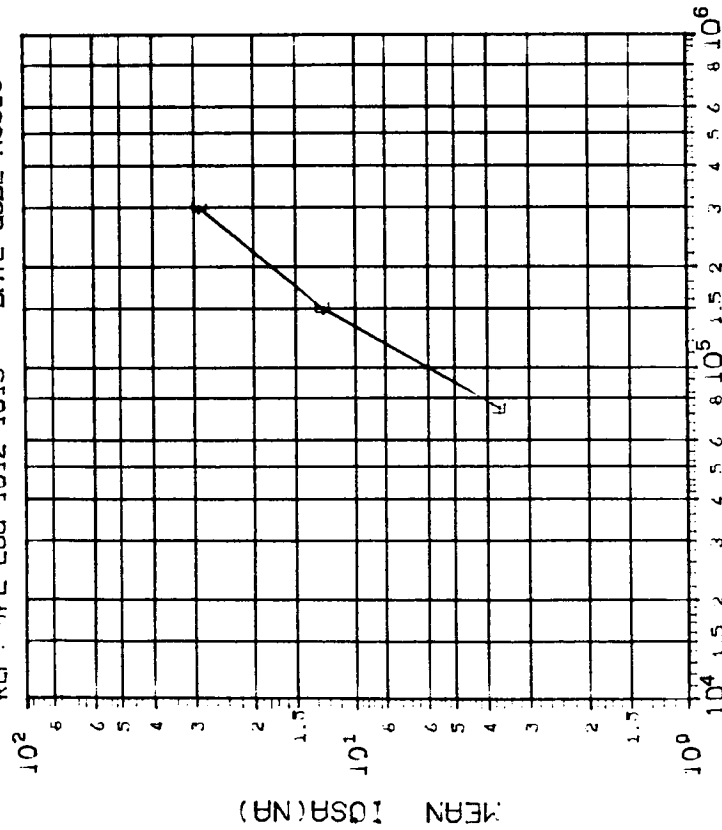
(6)IOSB (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
F	75	150
	12.74	24.63
48.04		

INITIAL MEAN VALUE IOSB(NA) = 4.47X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

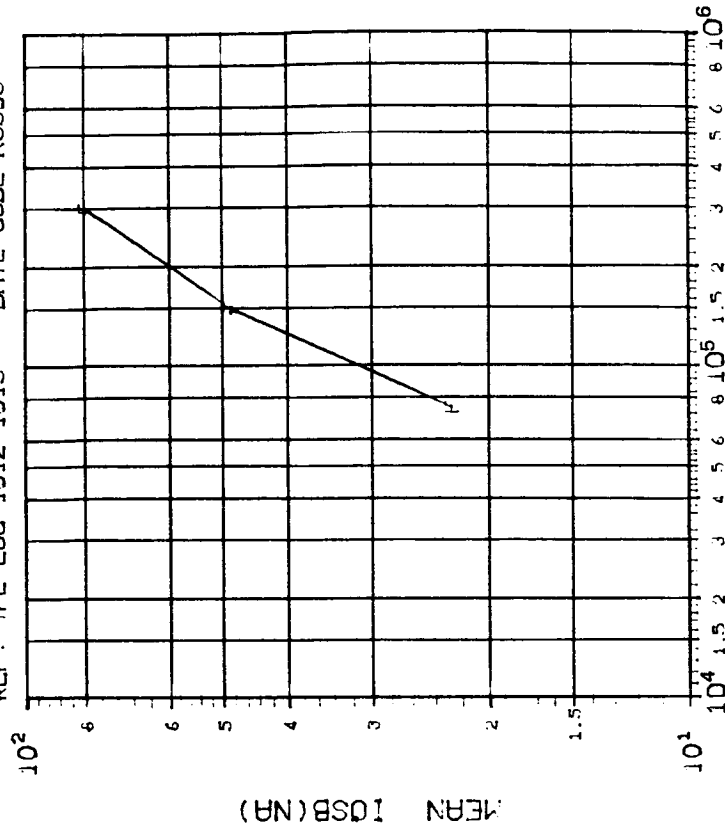
(5)10SA (V0=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
E	75	150
	21.72	45.08

INITIAL MEAN VALUE 10SA(NA) = 4.50×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

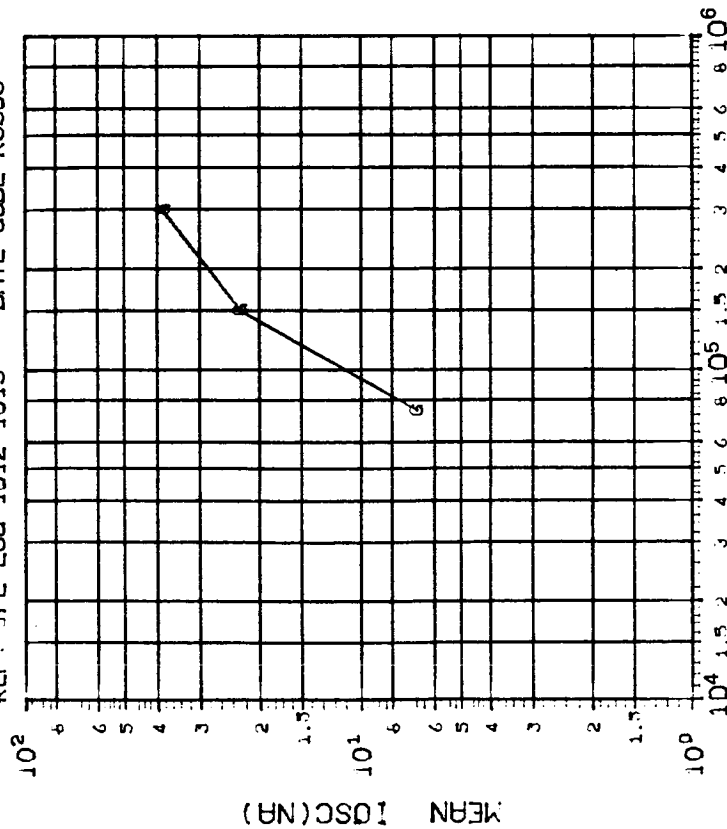
(6)10SB (V0=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
F	75	150
	13.19	44.42

INITIAL MEAN VALUE 10SB(NA) = 4.51×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

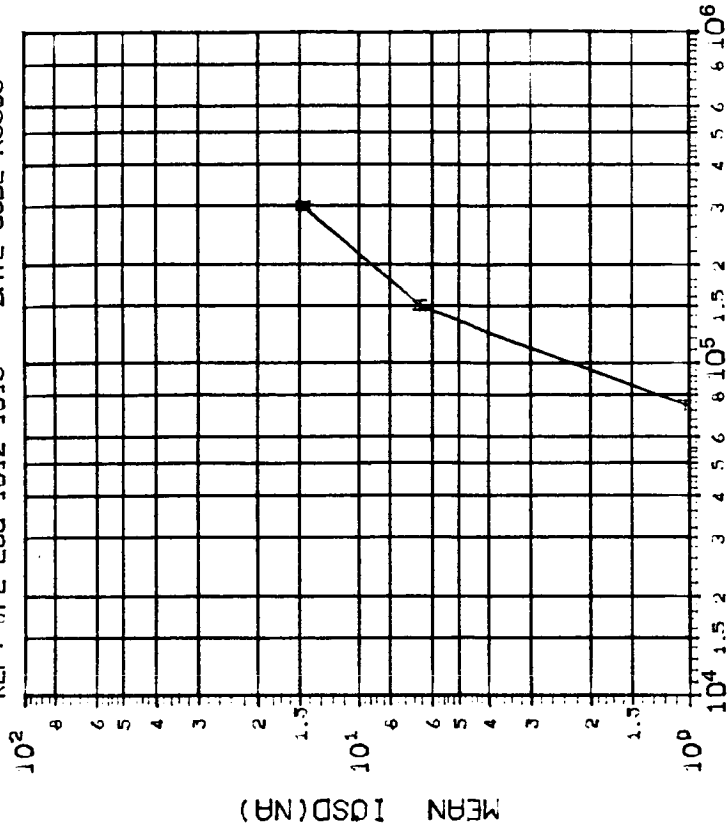
(7)10SC (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75
	150
	300
7.159 28.33 53.32	

INITIAL MEAN VALUE 10SC(NA) = 5.32X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

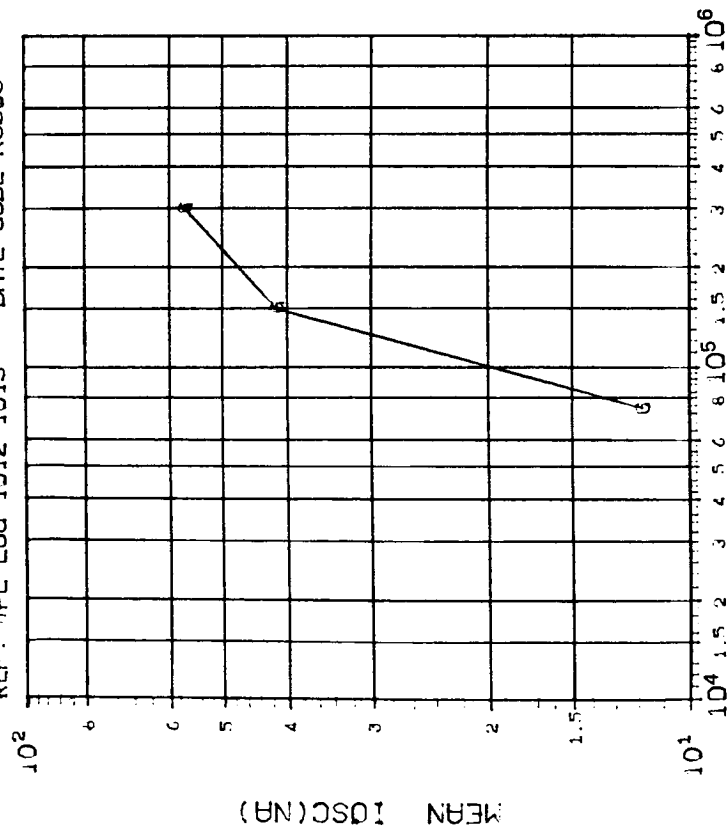
(8)10SD (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	150
	300
7.916 15.23 22.68	

INITIAL MEAN VALUE 10SD(NA) = 4.86X10⁻⁹

DEVICE TYPE: LM139 OUPD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

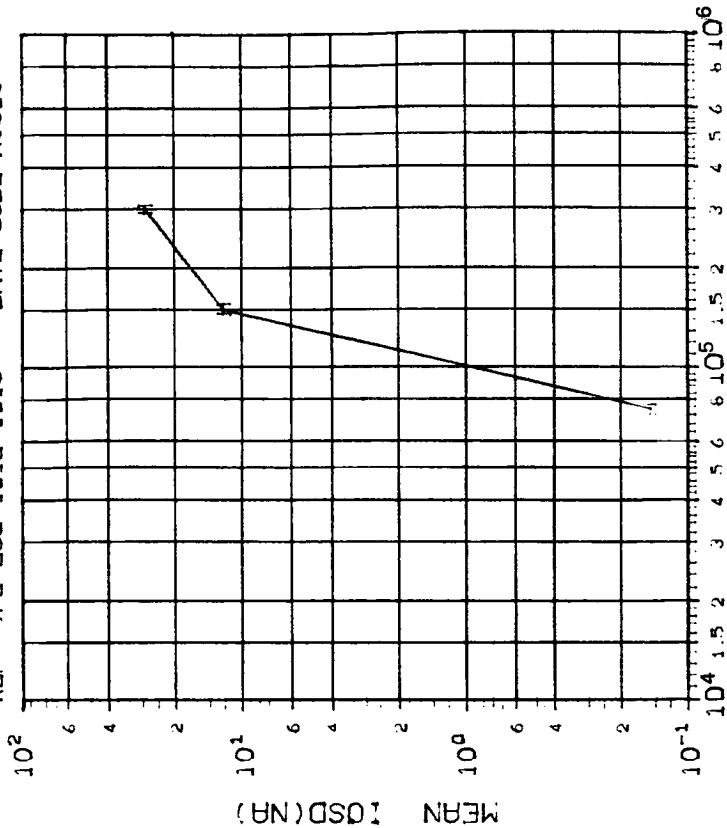
(7)IOSC (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75
	150
	300
8.642 34.59 46.62	

INITIAL MEAN VALUE IOSC(NA) = 5.24×10^{-9}

DEVICE TYPE: LM139 OUPD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

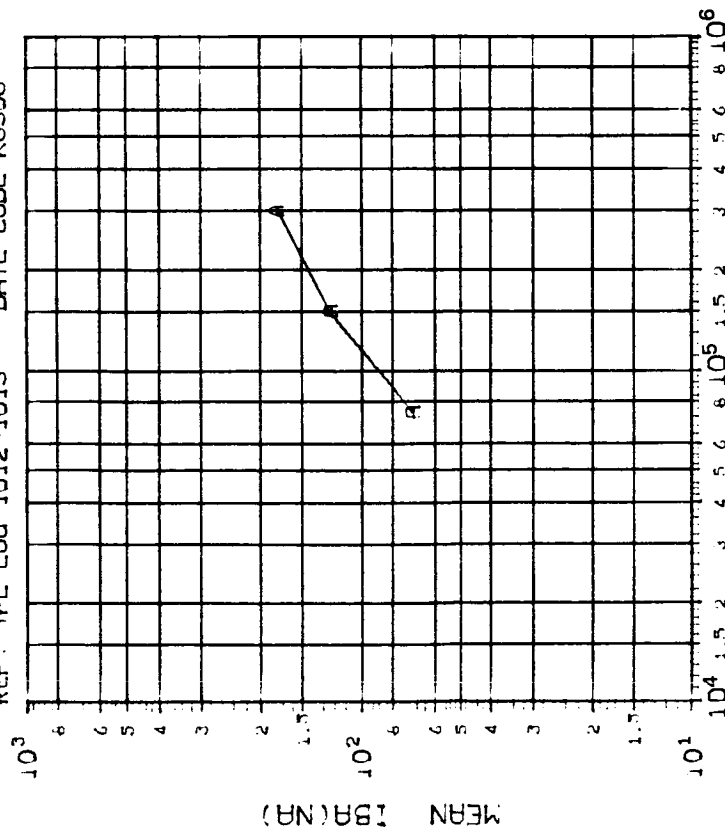
(8)IOSD (V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	150
	300
8.610 29.41 53.62	

INITIAL MEAN VALUE IOSD(NA) = 4.83×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 03-20-83
REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

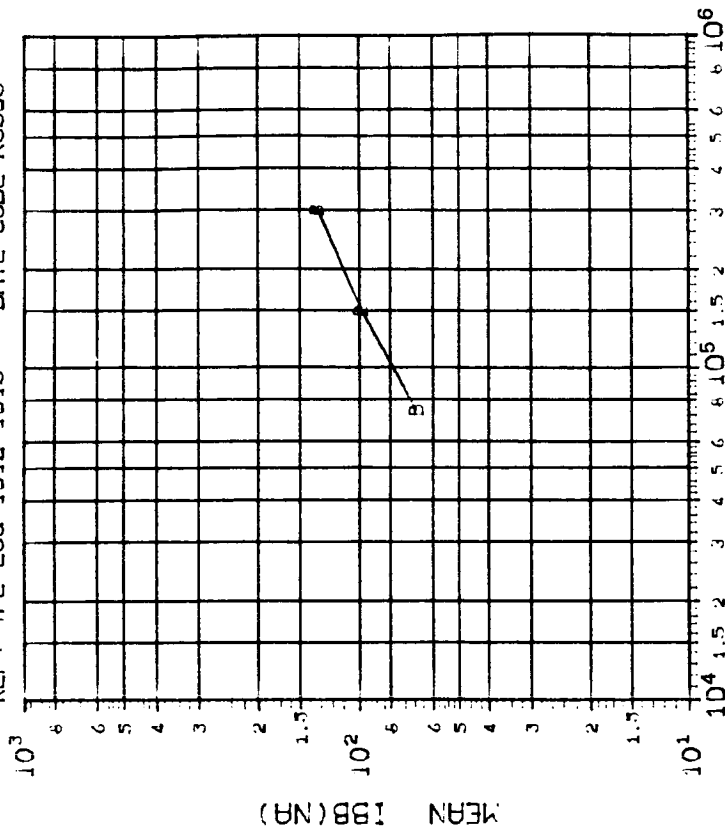
(1)1BA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	300
	28.31	76.70 123.7

INITIAL MEAN VALUE 1BA(NR) = $1.43 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 03-20-83
REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co 60 Gammas

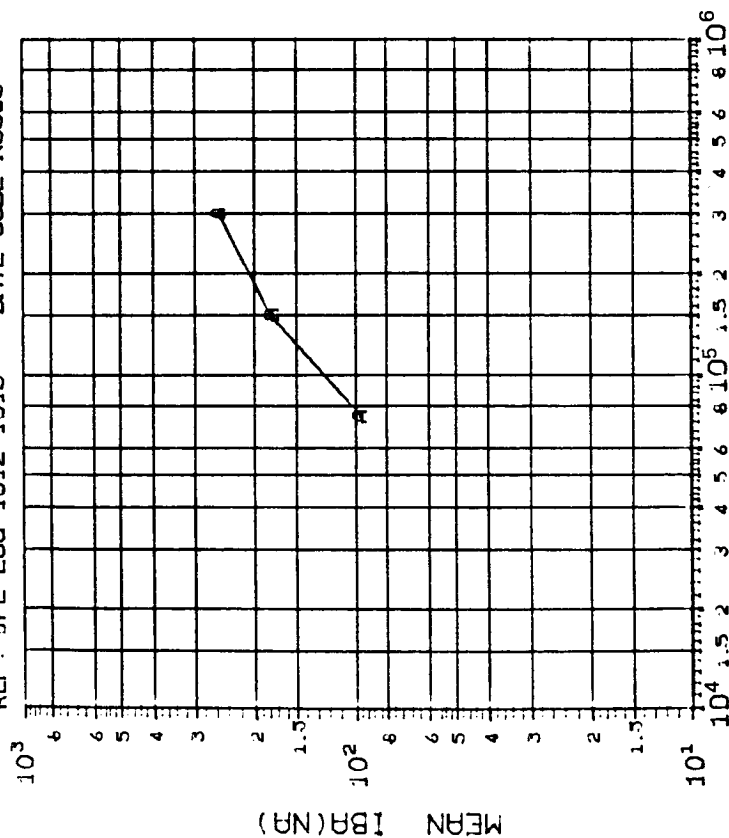
(2)1BB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	300
	26.41	59.60 80.48

INITIAL MEAN VALUE 1BB(NR) = $1.40 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

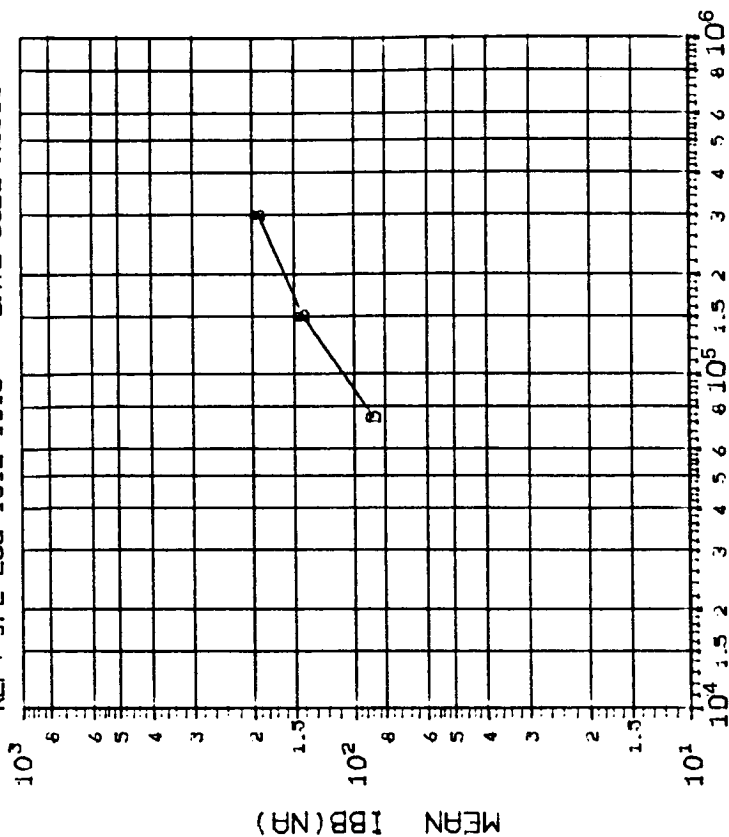
(1)IBA (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
41.66 101.0 158.6	

INITIAL MEAN VALUE IBA(NA) = 1.49×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



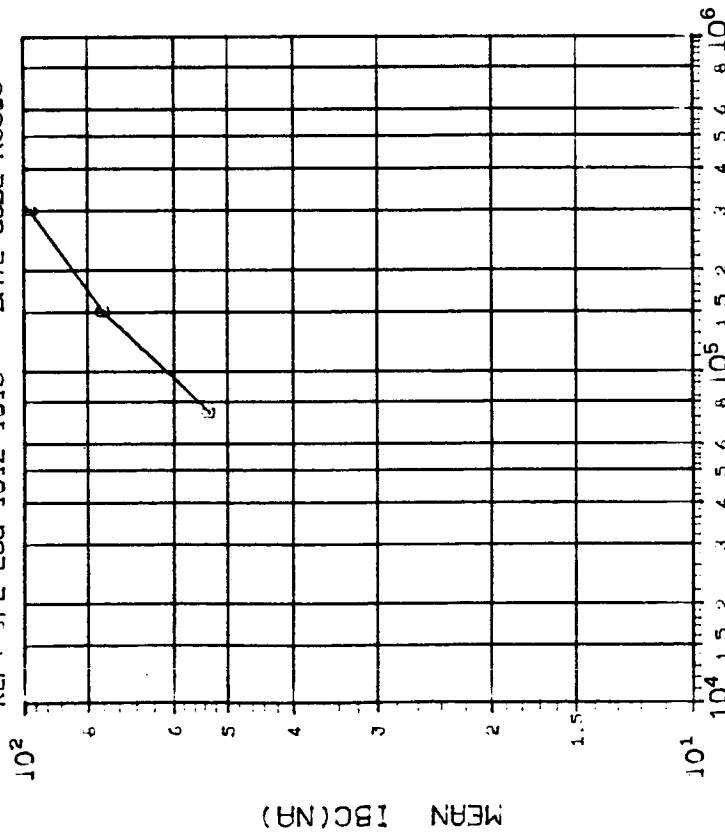
DOSE, rads(Si) Co⁶⁰ Gammas

(2)IBB (VO=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
35.58 84.41 119.4	

INITIAL MEAN VALUE IBB(NA) = 1.52×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



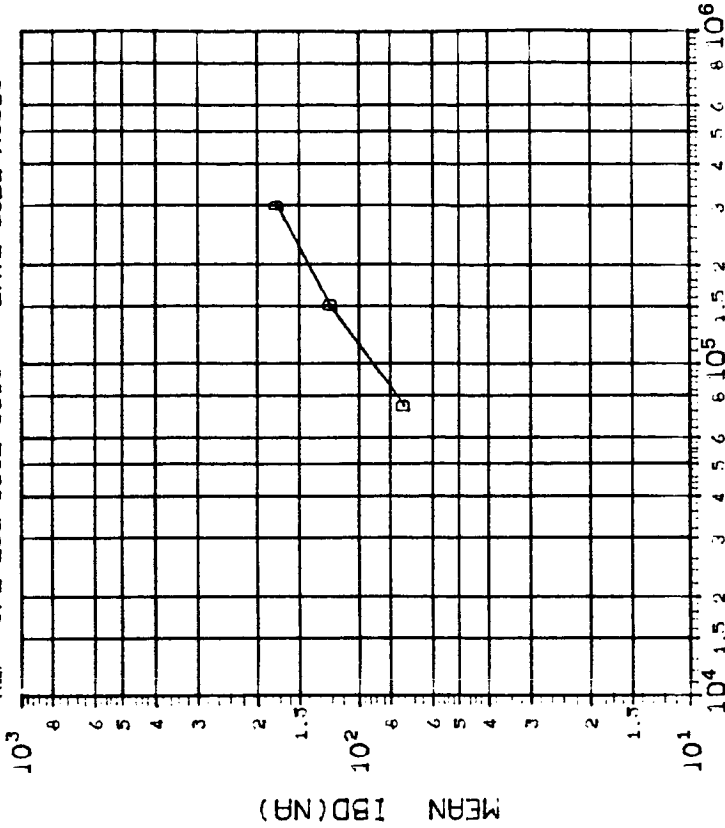
DOSE, rads(Si) Co⁶⁰ Gammas

(3) IBC (V₀=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
20.05 36.46 34.19	

INITIAL MEAN VALUE IBC(NA) = $1.44 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

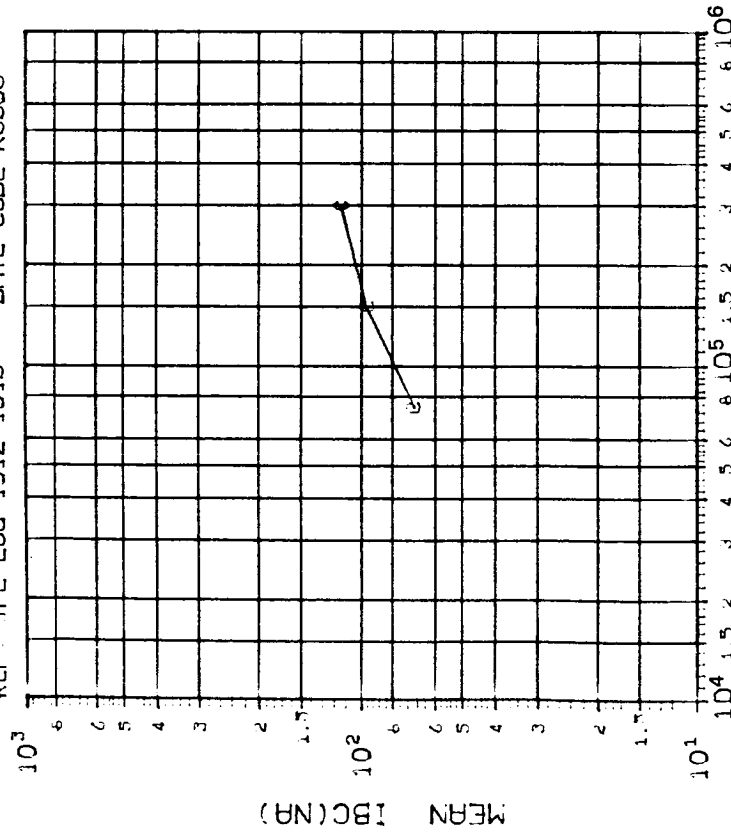
(4) IBD (V₀=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
36.18 91.65 148.2	

INITIAL MEAN VALUE IBD(NA) = $1.36 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

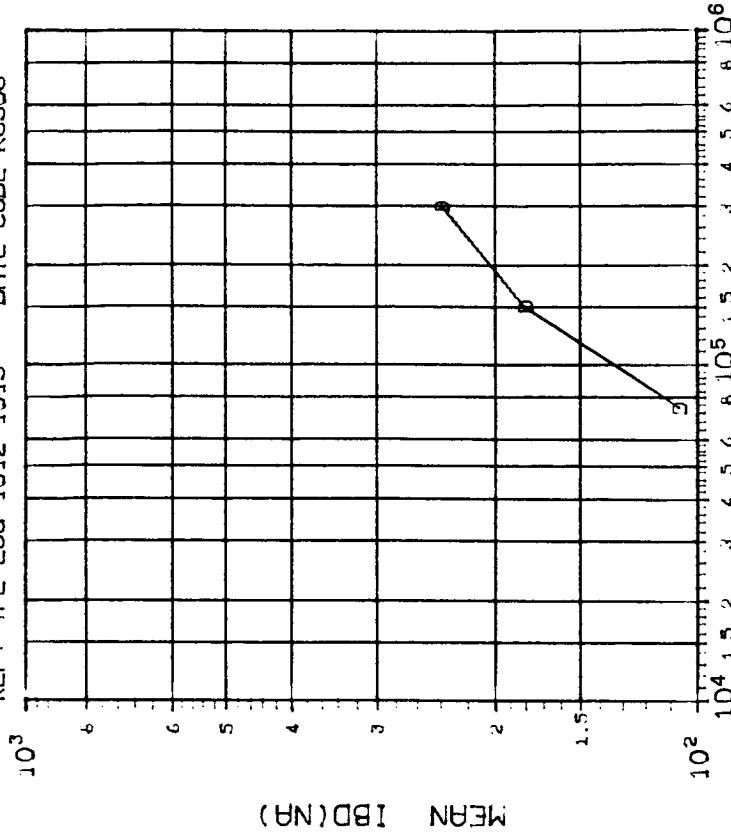
(3)IBC (V0=OV) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	150
	300	
	26.23	37.67 34.55

INITIAL MEAN VALUE IBC(NA) = 1.55X10¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: TPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

(4)IBD (V0=OV) IN NA: VS DOSE

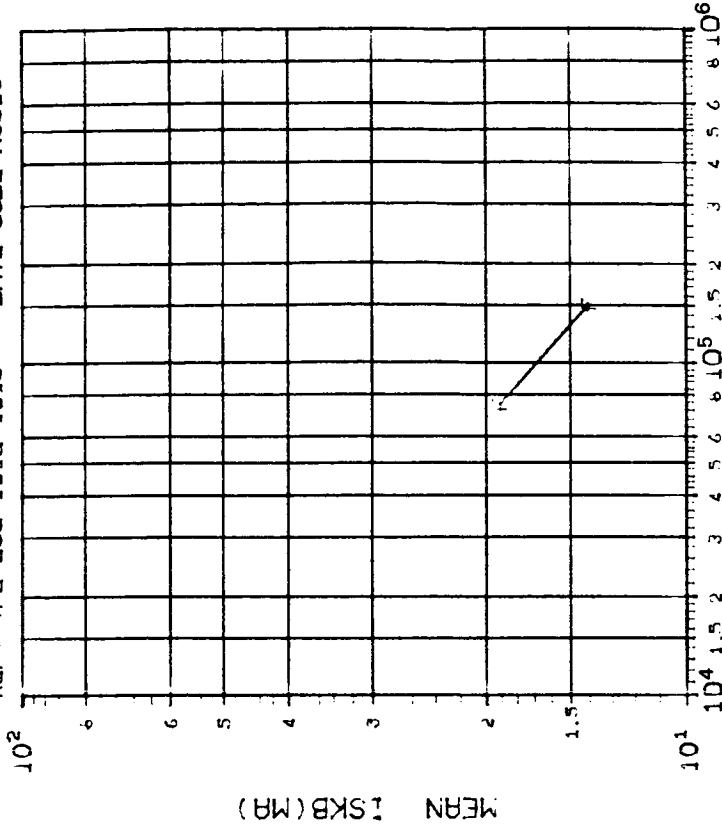
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75	150
	300	
	45.43	95.76 124.6

INITIAL MEAN VALUE IBD(NA) = 1.47X10¹¹

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DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: TPL LOG 1012-1013 DATE CODE K8308



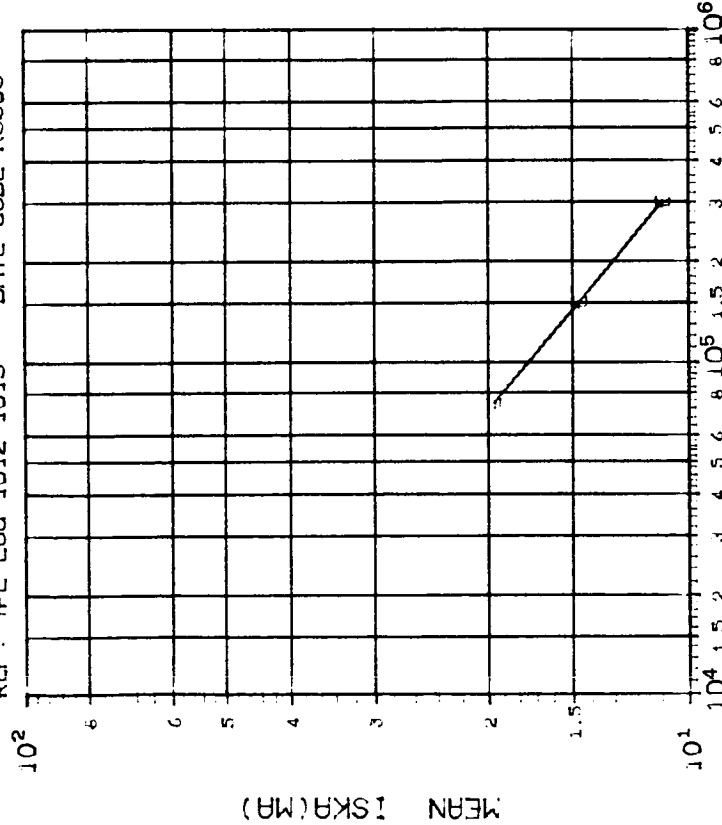
(6)11SKB (V₀=-V+1.5V, V_{IN}=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
F	4.727 6.002 ****	

INITIAL MEAN VALUE ISKB(MA) = 2.86X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: TPL LOG 1012-1013 DATE CODE K8308



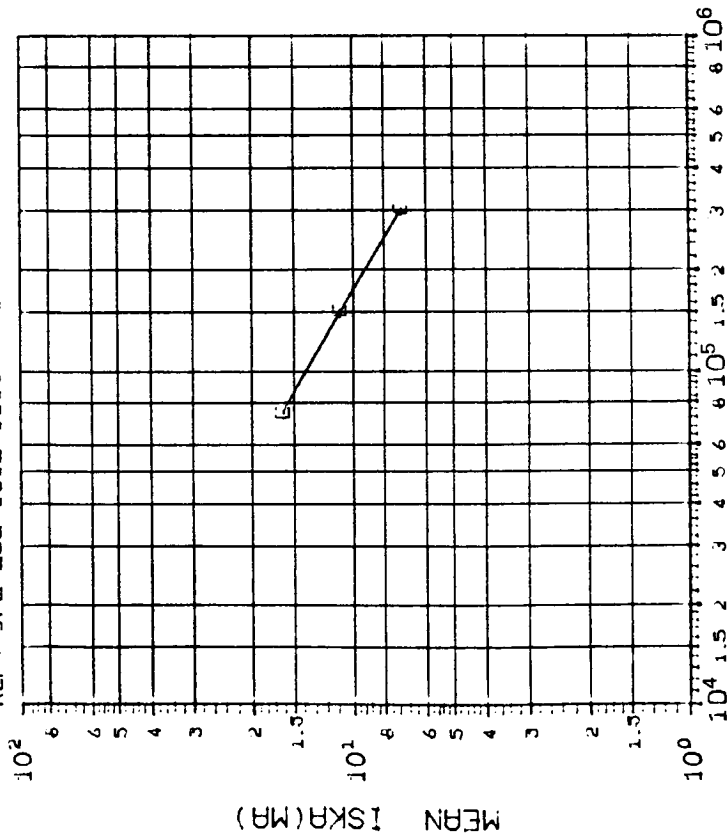
(5)11SKA (V₀=-V+1.5V, V_{IN}=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
E	4.465 5.603 6.276	

INITIAL MEAN VALUE ISKA(MA) = 2.86X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

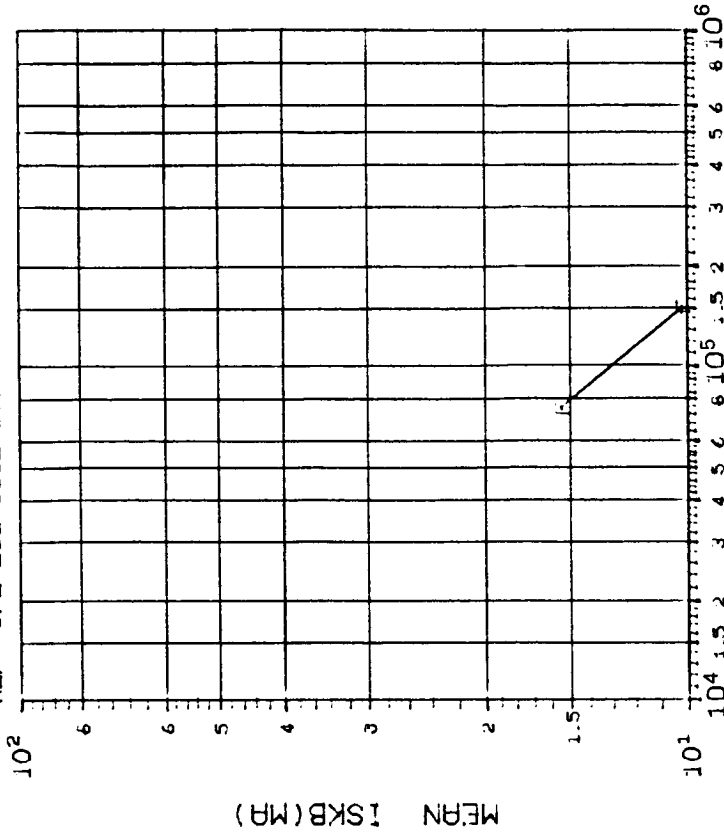
(5) ISKA (V₀=-V+1.5V, V_{IN}=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
E	4.942	5.779
	5.745	

INITIAL MEAN VALUE ISKA(MA) = 2.78X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



DOSE, rads(Si) Co⁶⁰ Gammas

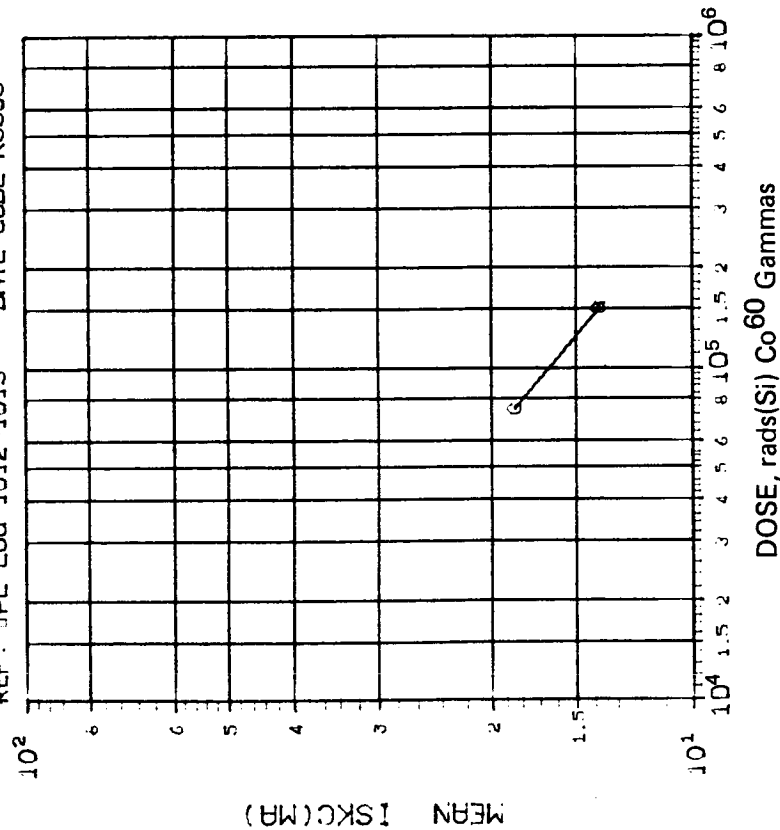
(6) ISKB (V₀=-V+1.5V, V_{IN}=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
F	4.710	5.288

INITIAL MEAN VALUE ISKB(MA) = 2.78X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



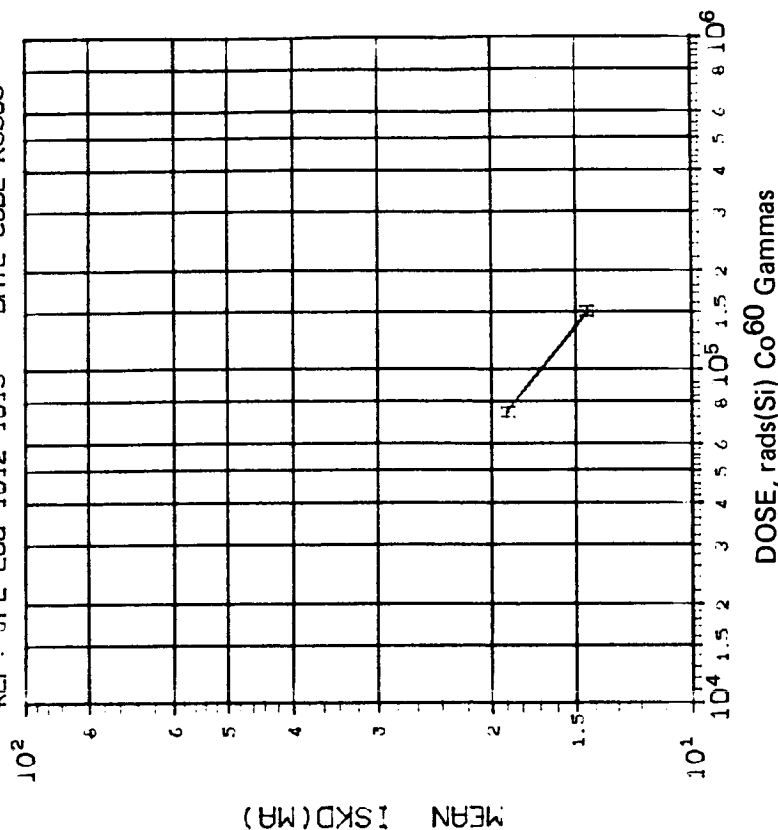
(7) ISK (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75
	150
	300
4.643 5.986 ****	

INITIAL MEAN VALUE ISK(MA) = 2.62×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



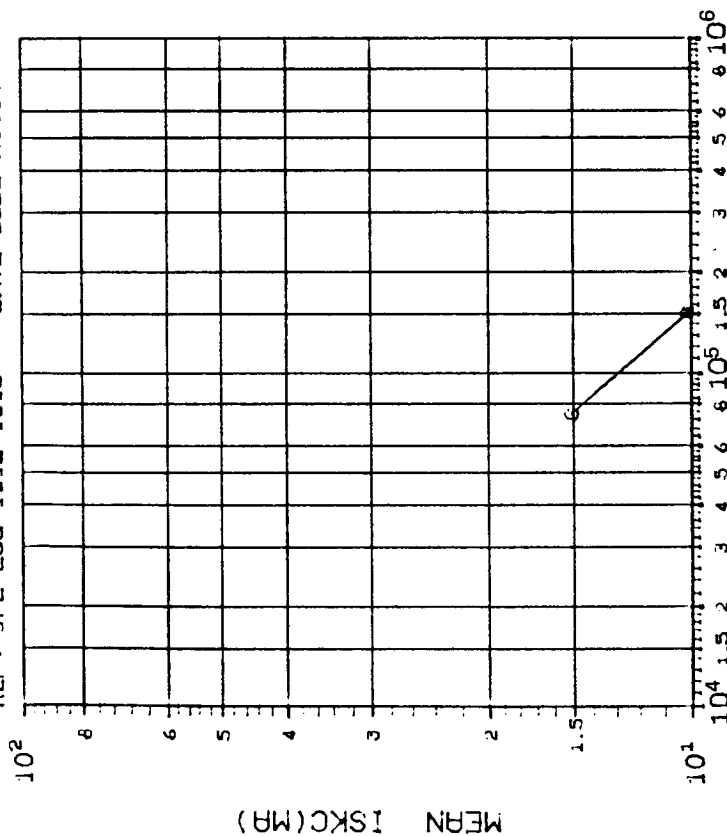
(8) ISK (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	150
	300
4.475 5.751 ****	

INITIAL MEAN VALUE ISK(MA) = 2.81×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



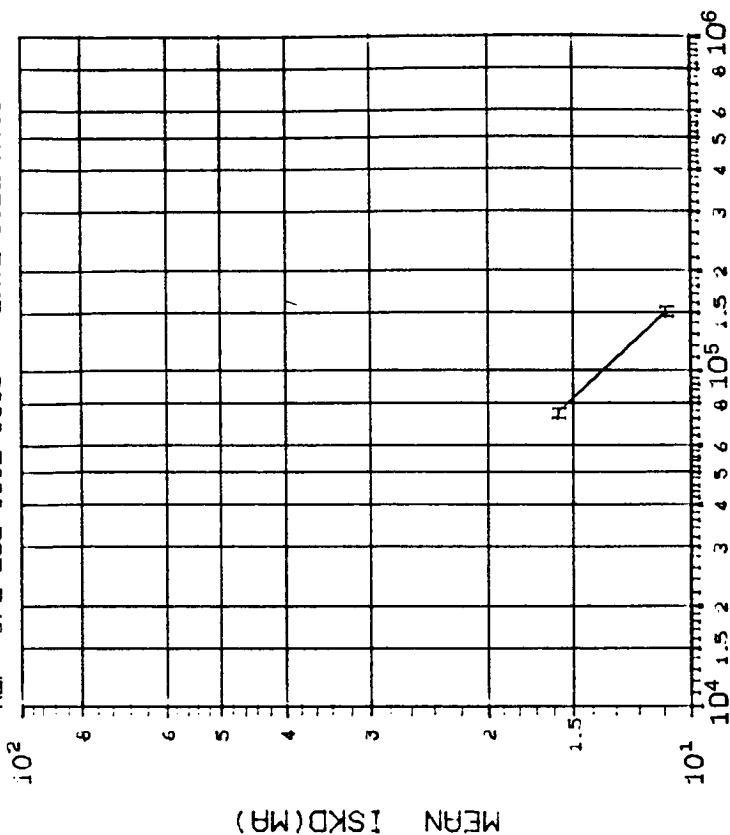
(7)ISKC (V0E--V+1.5V,V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75
	150
	300
4.190 4.777 ****	

INITIAL MEAN VALUE ISKC(MR) = $2.74 \times 10^{+3}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: MOT 5 DEVICES TEST DATE 05-20-83
REF: JPL LOG 1012-1013 DATE CODE K8308



(8)ISKD (V0E--V+1.5V,V1N=-100MV) IN VS DOSE

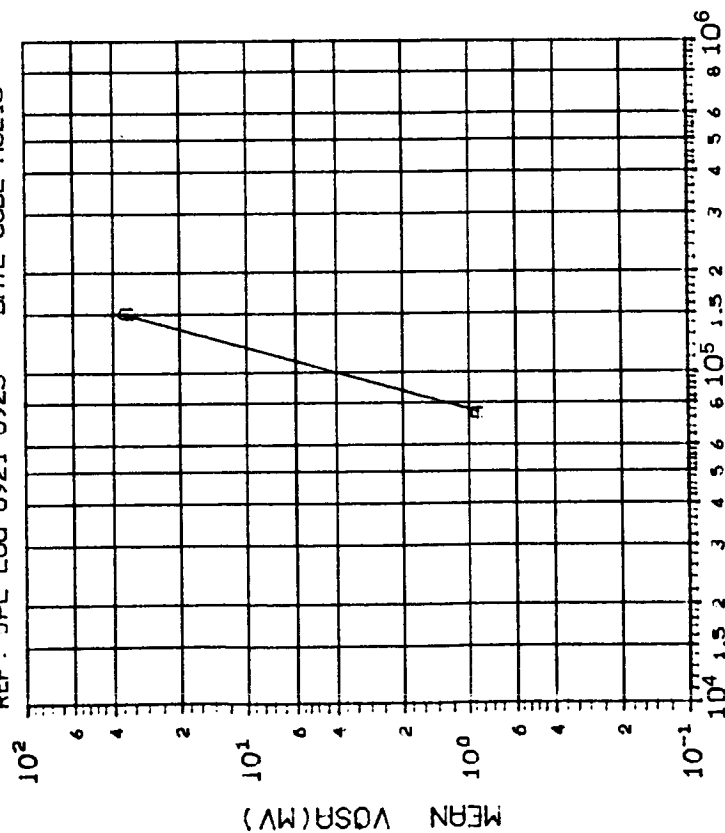
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	150
	300
4.535 5.251 ****	

INITIAL MEAN VALUE ISKD(MR) = $2.75 \times 10^{+3}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



DOSE, rads(Si) Co⁶⁰ Gammas

(1)VOSR (V0=0) IN MV: VS DOSE

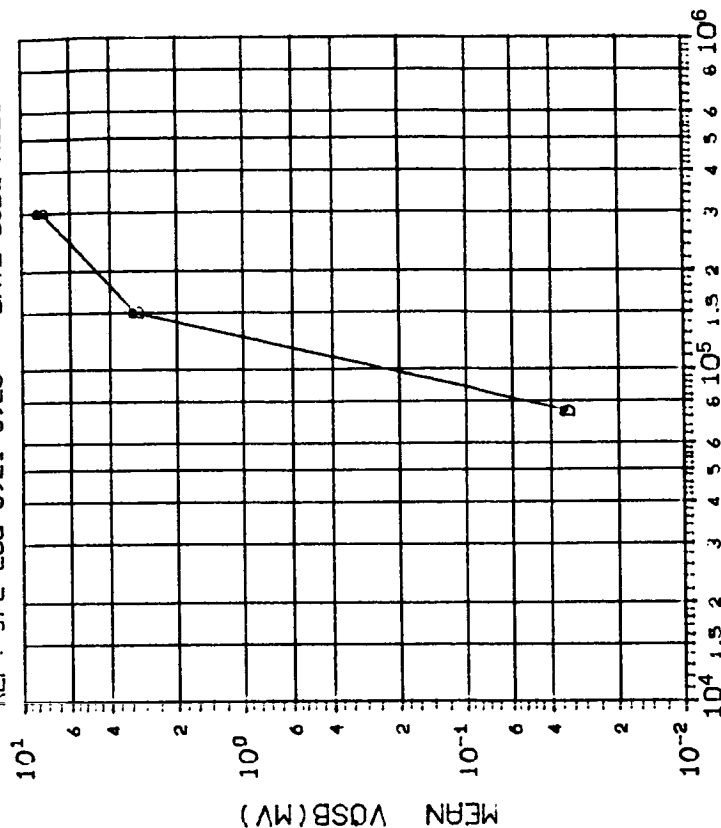
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
A	1.005	36.17 ***

INITIAL MEAN VALUE VOSR(MV) = 1.91×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



DOSE, rads(Si) Co⁶⁰ Gammas

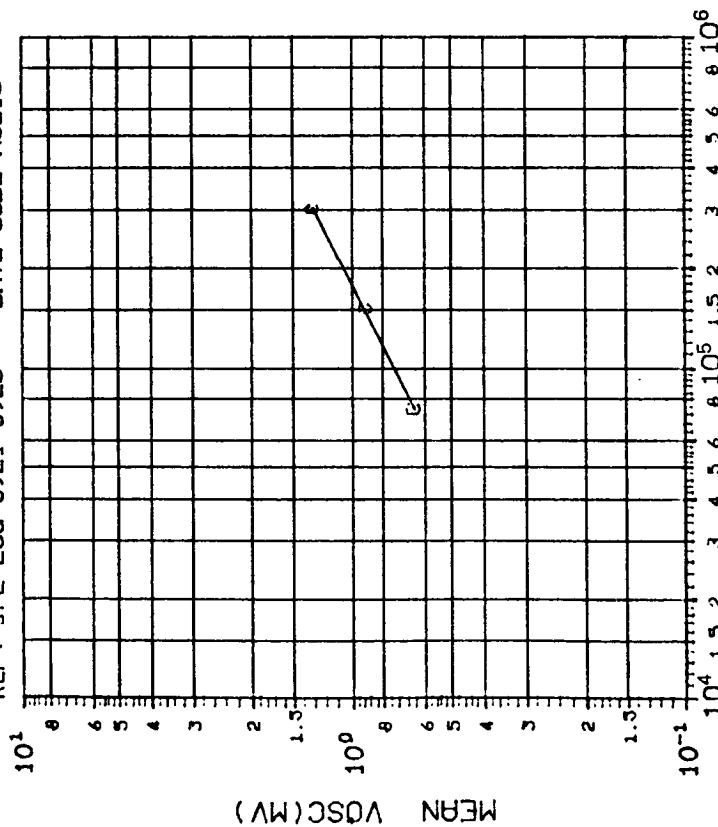
(2)VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
B	.9323	2.256 10.70

INITIAL MEAN VALUE VOSB(MV) = 2.96×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83
REF: JPL LOG 0921-0923 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

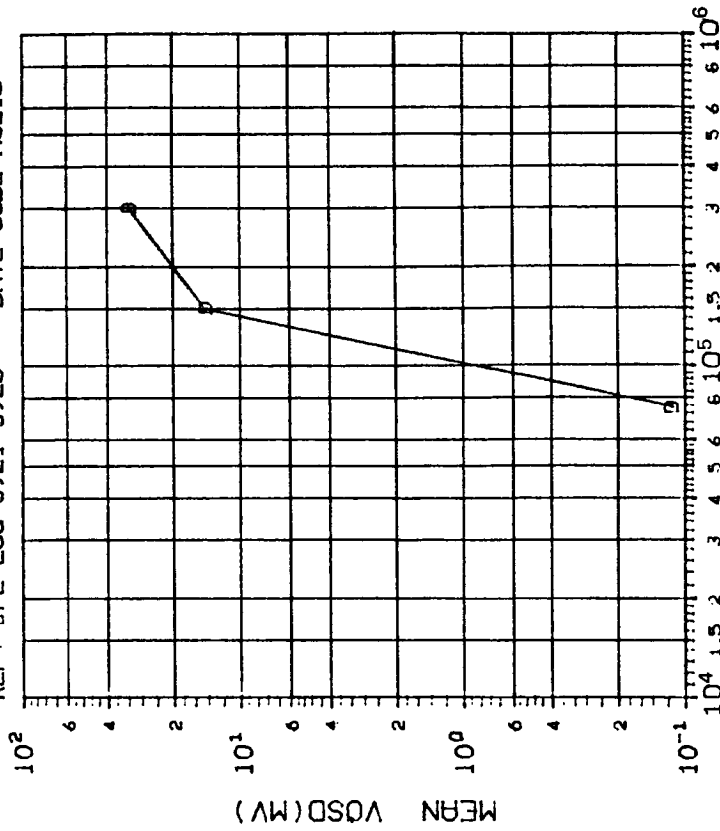
(3)VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
.7878 1.065 2.372	

INITIAL MEAN VALUE VOSC(MV) = 6.87X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83
REF: JPL LOG 0921-0923 DATE CODE M8215



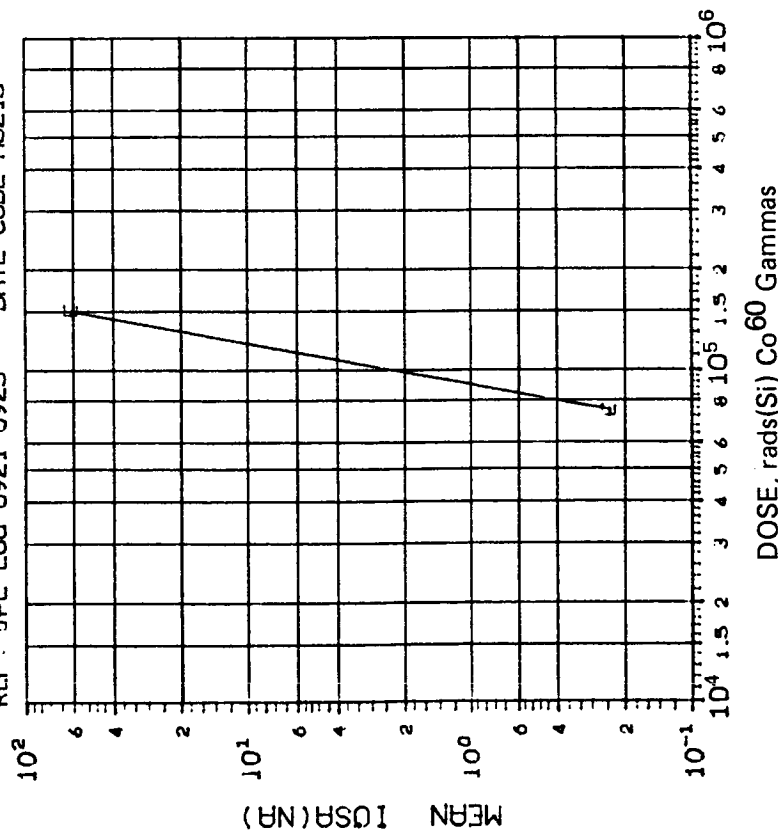
DOSE, rads(Si) Co 60 Gammas

(4)VOSD (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
.9771 7.711 34.14	

INITIAL MEAN VALUE VOSD(MV) = 2.94X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215

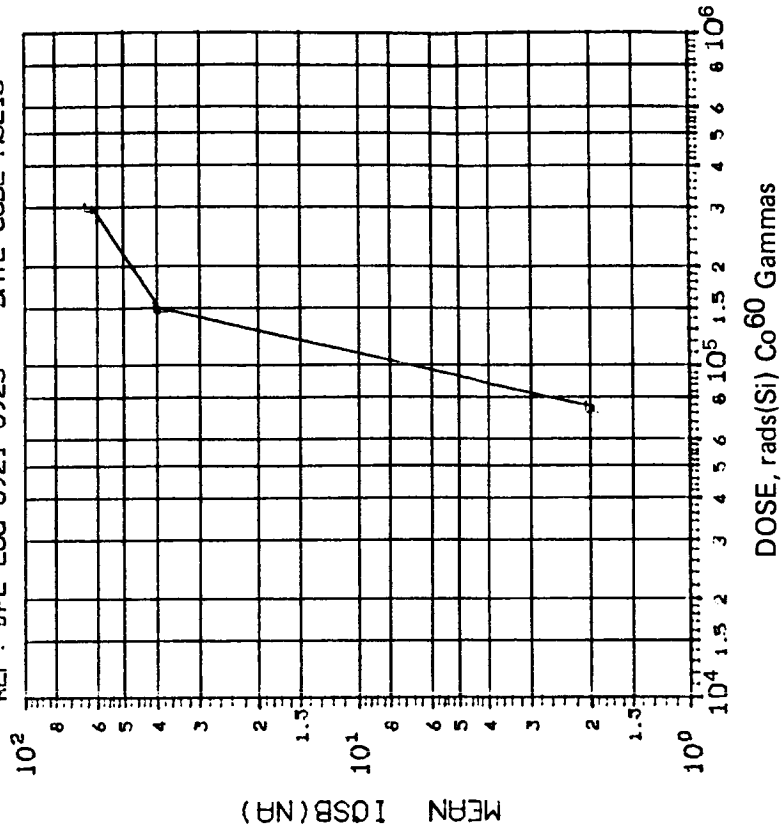


(51)IOSA (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75
	150
	300
4.833 77.80 ***	

INITIAL MEAN VALUE IOSA(NA) = 3.02×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: NSC 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0921-0923 DATE CODE M8215



(61)IOSB (VO=0) IN NA: VS DOSE

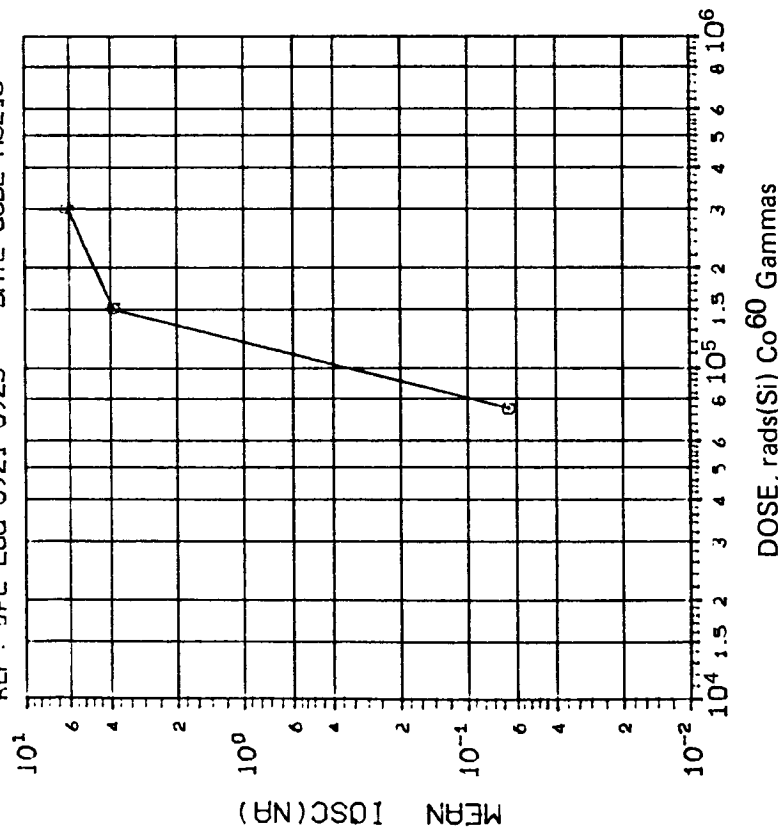
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75
	150
	300
8.913 59.26 152.2	

INITIAL MEAN VALUE IOSB(NA) = 2.74×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(7)IOSC (V0=0) IN NA: VS DOSE

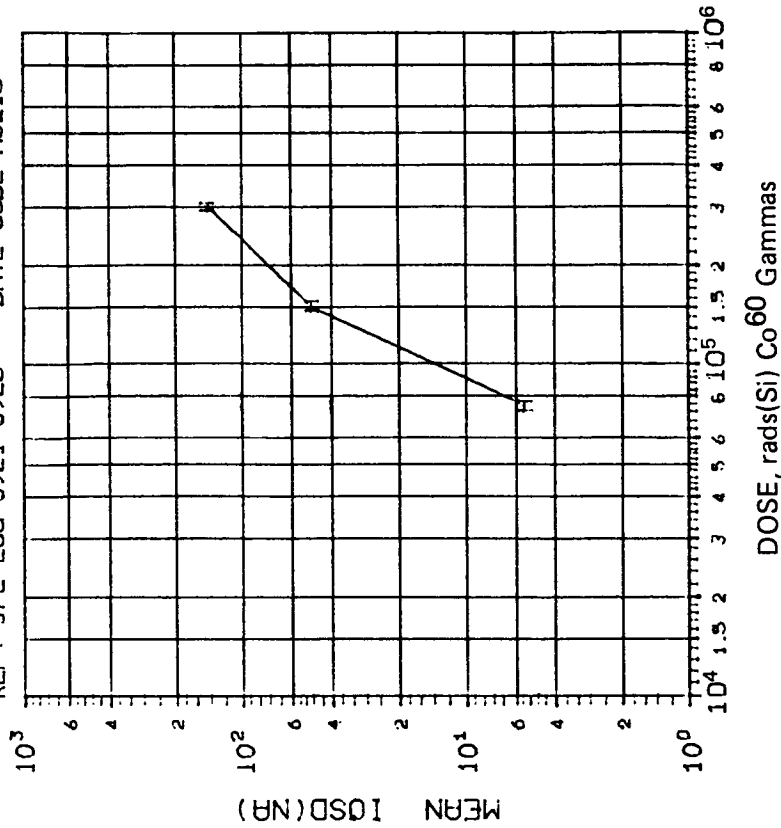
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75
	150
	300
5.239 33.97 73.26	

INITIAL MEAN VALUE IOSC(NA) = 1.60X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(8)IOSD (V0=0) IN NA: VS DOSE

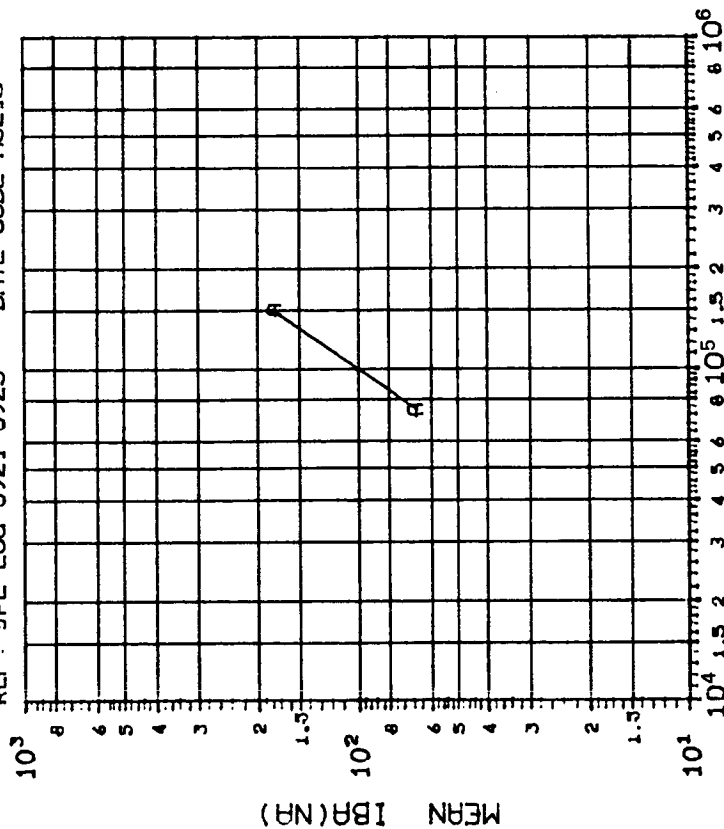
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75
	150
	300
3.854 31.31 99.60	

INITIAL MEAN VALUE IOSD(NA) = 3.81X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



(11)IBA (VO=0) IN NA: VS DOSE

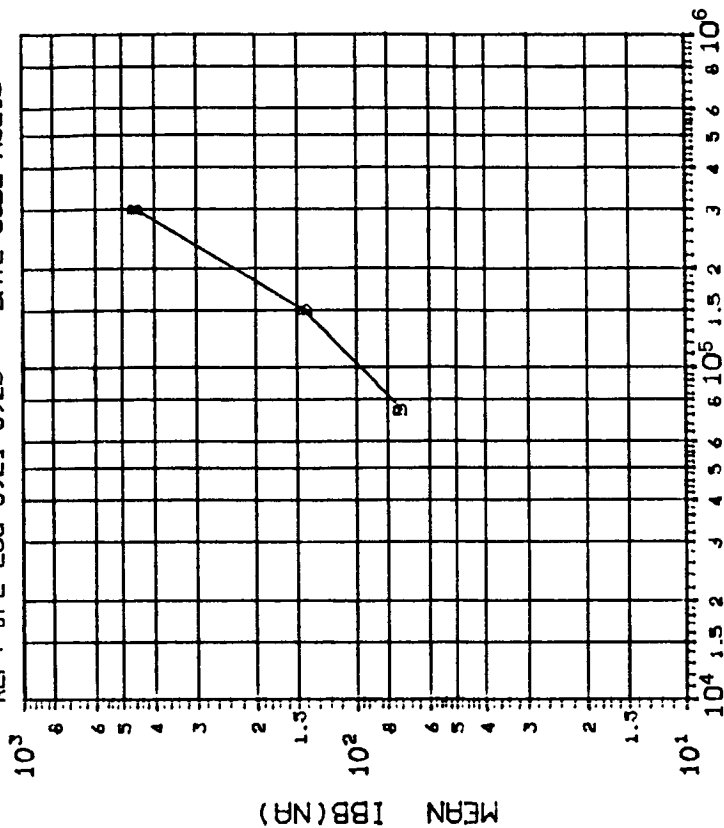
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	150
	300	***

INITIAL MEAN VALUE IBA(NA) = $4.68 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



(21)IBB (VO=0) IN NA: VS DOSE

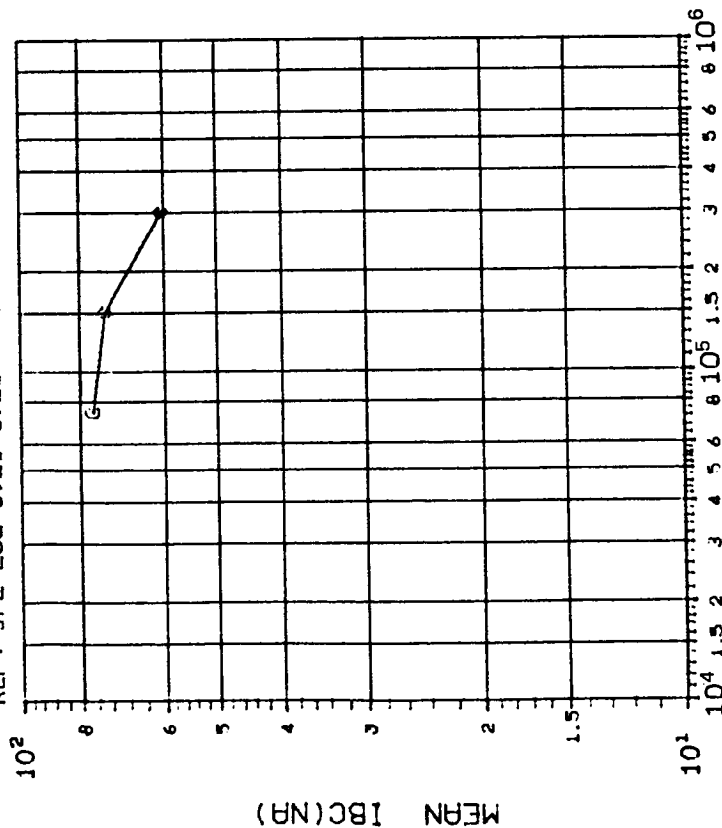
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	150
	300	439.4

INITIAL MEAN VALUE IBB(NA) = $4.74 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



(3)IBC (V0=0) IN NA: VS DOSE

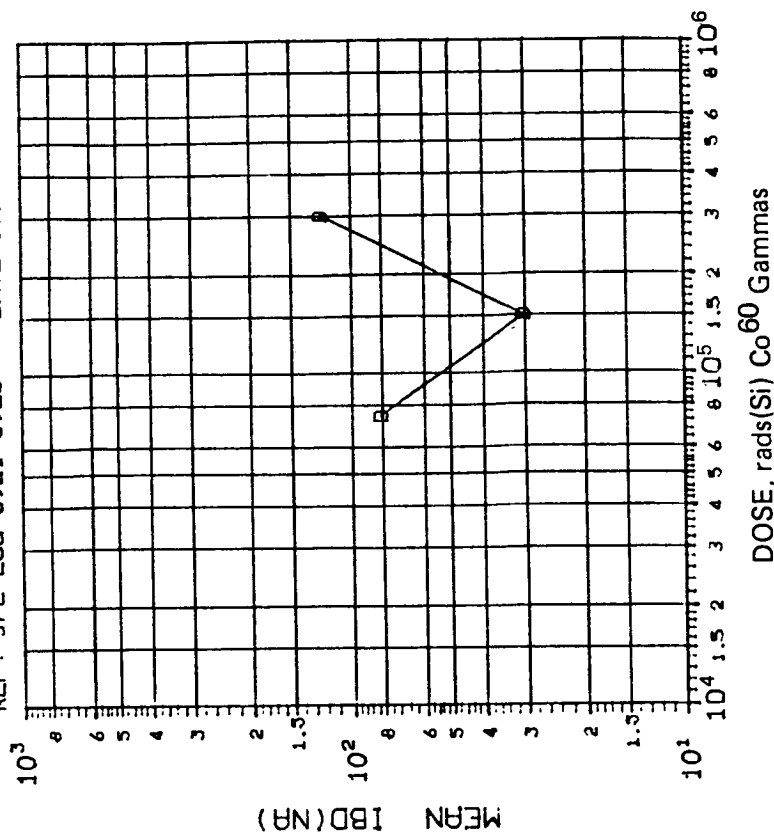
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	300
	13.10	92.16 547.6

INITIAL MEAN VALUE IBC(NA) = 4.67X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



(4)IBD (V0=0) IN NA: VS DOSE

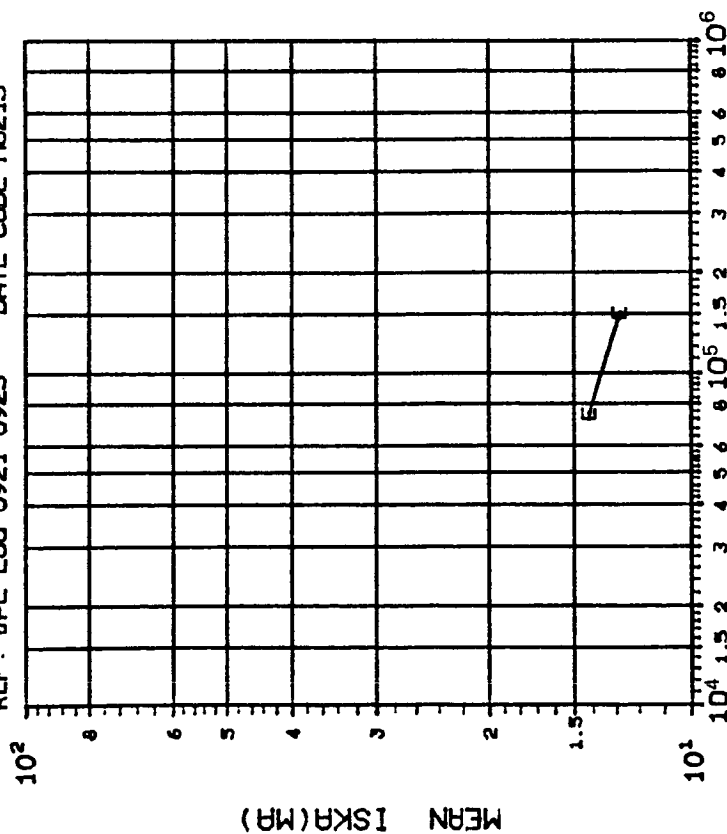
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75	300
	9.571	79.75 147.6

INITIAL MEAN VALUE IBD(NA) = 4.76X10⁺¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



(5) ISKA (V_{CE}=-V+1.5V, V_{IN}=-100MV) IN VS DOSE

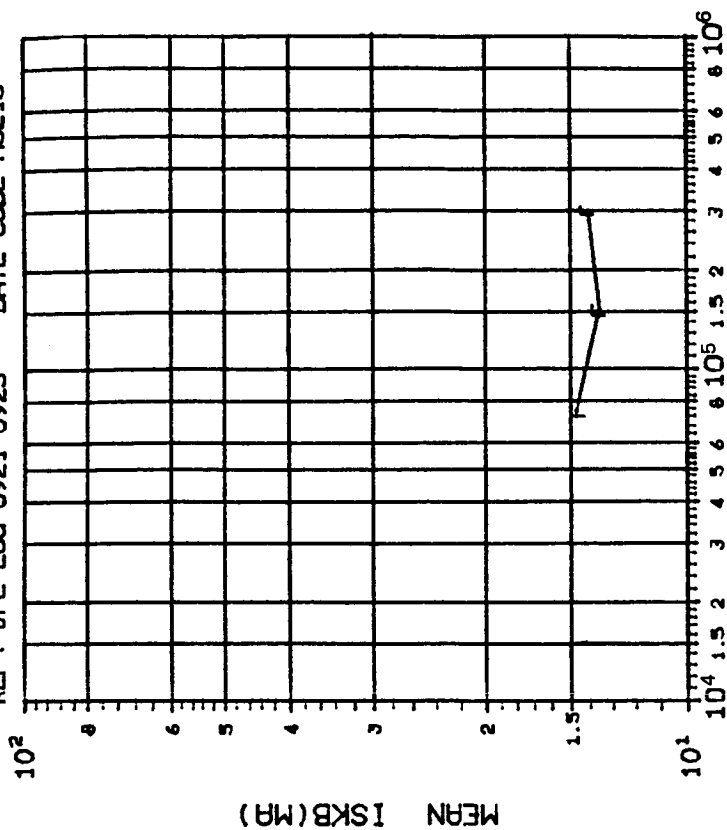
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
E	75	150
	150	300
	1.651	2.191 ***

INITIAL MEAN VALUE ISKA(MA) = 1.70X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



(6) ISKB (V_{CE}=-V+1.5V, V_{IN}=-100MV) IN VS DOSE

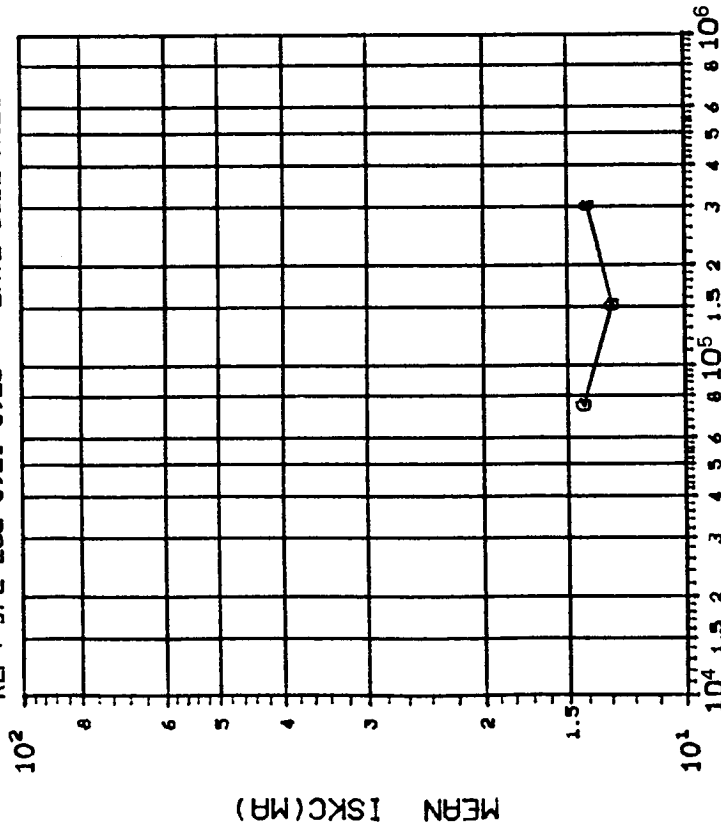
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
F	75	150
	150	300
	1.922	2.247 6.303

INITIAL MEAN VALUE ISKB(MA) = 1.72X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(7)ISKC (V0E--V+1.5V,VINE--100MV) IN VS DOSE

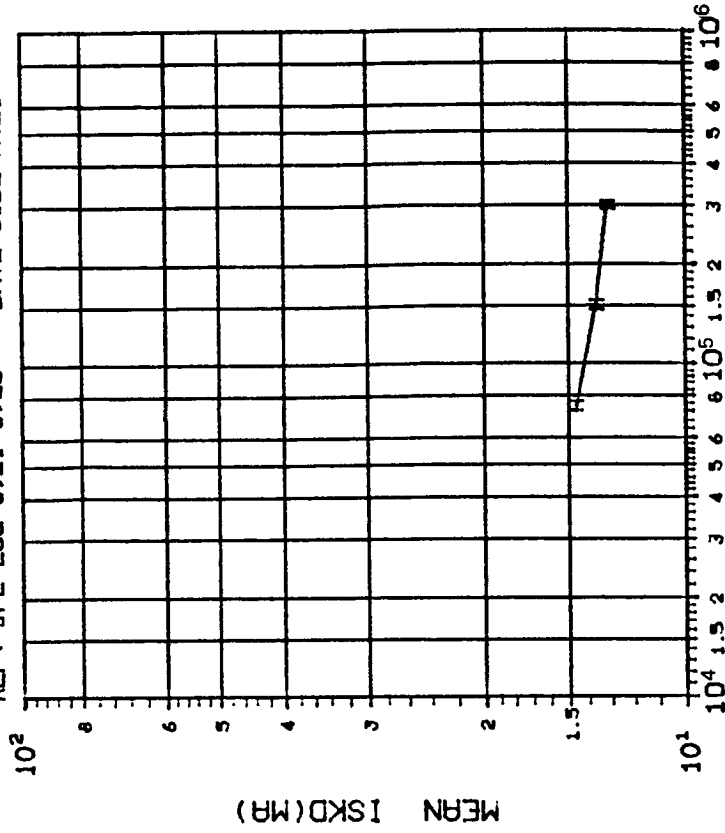
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	300
G	1.926	2.117
	6.363	

INITIAL MEAN VALUE ISKC(MR) = 1.70X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0921-0923 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(8)ISKD (V0E--V+1.5V,VINE--100MV) IN VS DOSE

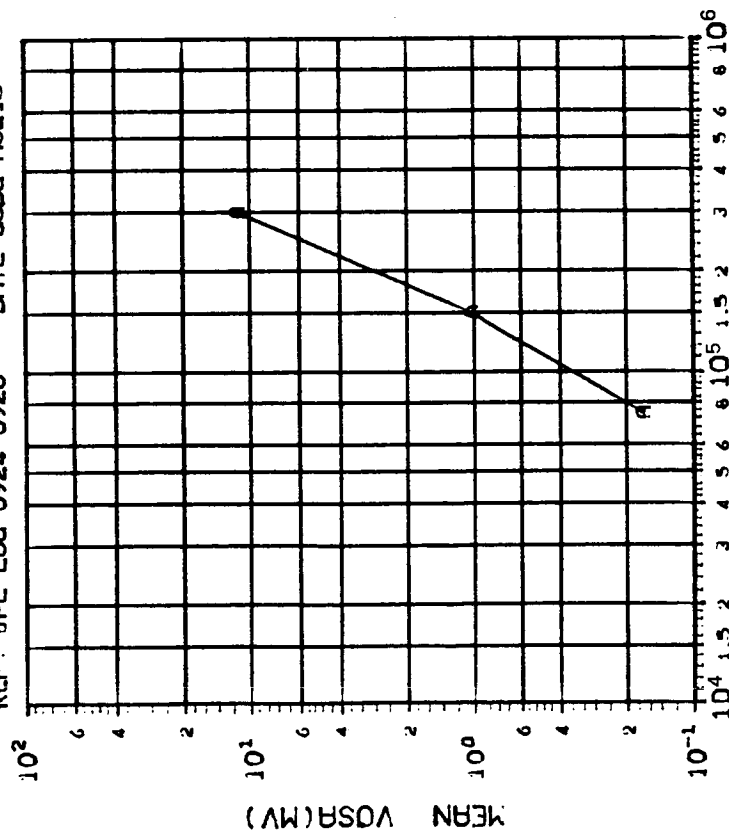
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	300
H	1.759	2.023
	6.449	

INITIAL MEAN VALUE ISKD(MR) = 1.68X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARTOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(1)VOSA (V0=0) IN MV: VS DOSE

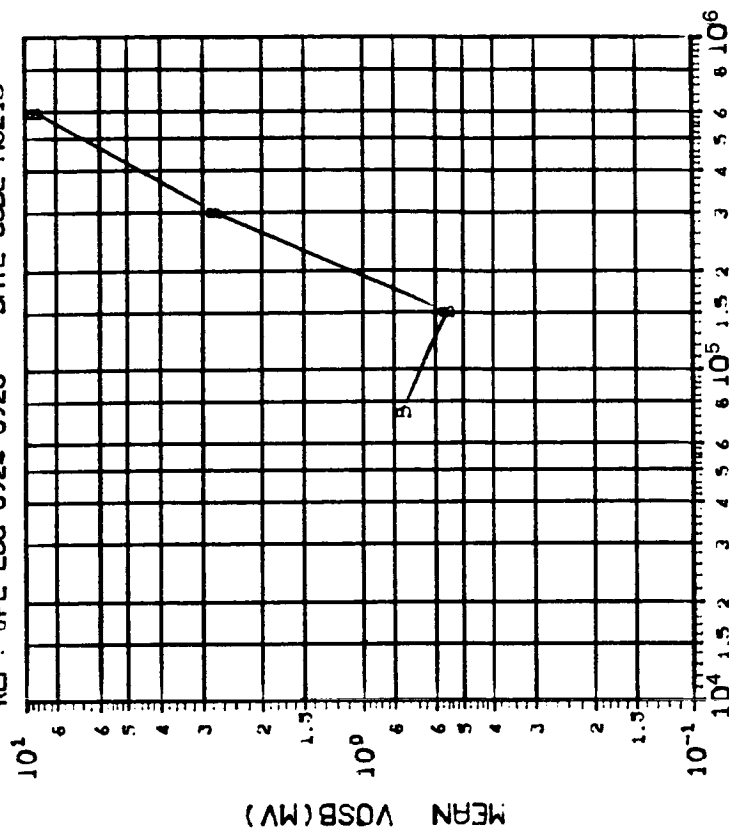
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	1000
A	.6770	1.062
	5.597	***
	***	***

INITIAL MEAN VALUE VOSA(MV) = 2.20X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARTOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(2)VOSB (V0=0) IN MV: VS DOSE

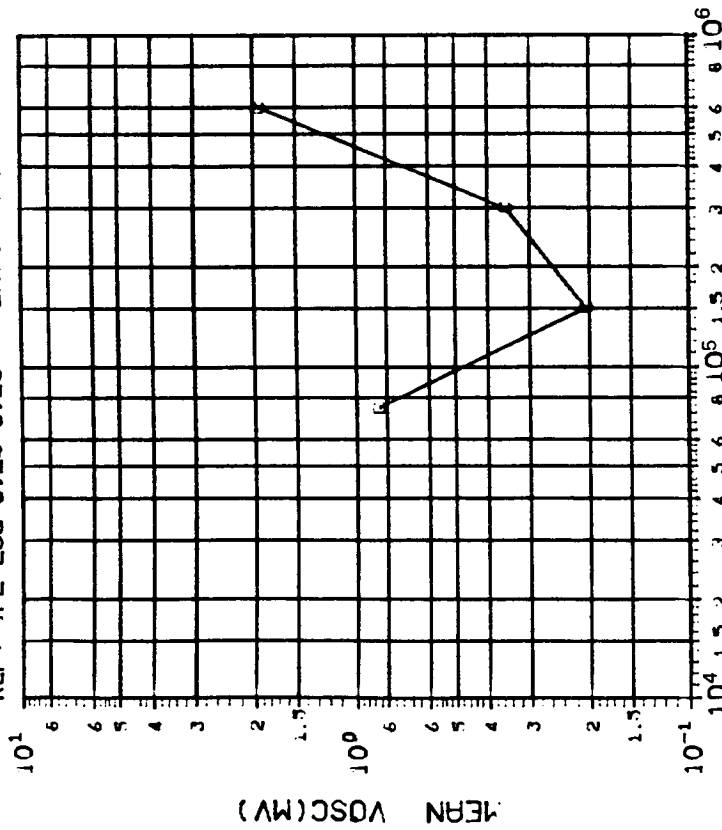
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	1000
B	.5133	.4198
	3.593	6.197
	***	***

INITIAL MEAN VALUE VOSB(MV) = 7.92X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(3) VOSC (V0=0) IN MV: VS DOSE

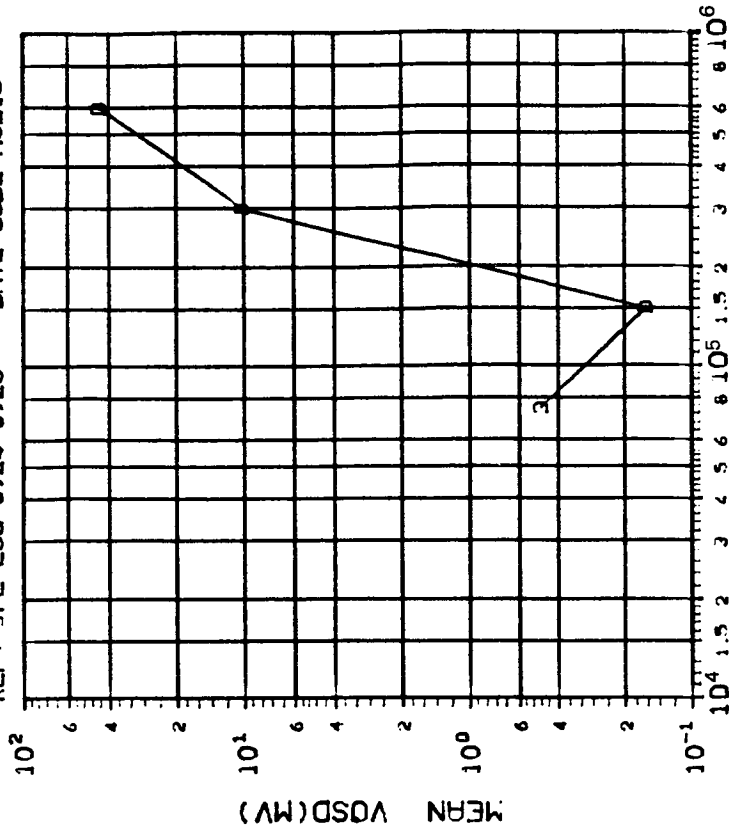
TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
C	.4963	.3667	1.249 4.633 ***

INITIAL MEAN VALUE VOSC(MV) = 8.50X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co 60 Gammas

(4) VOSD (V0=0) IN MV: VS DOSE

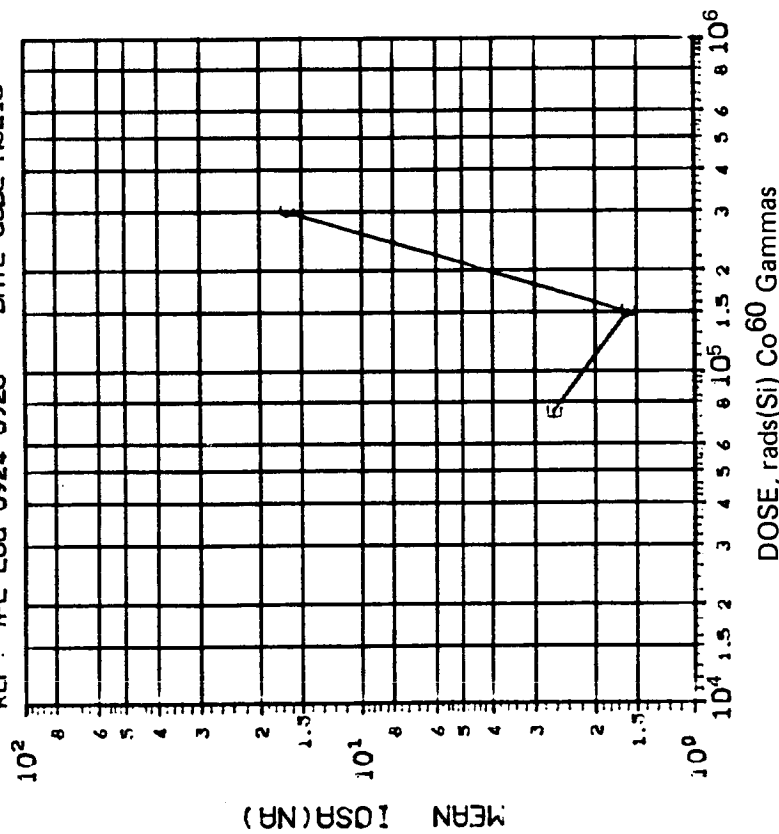
TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
D	.7623	.6366	9.337 5.374 ***

INITIAL MEAN VALUE VOSD(MV) = 4.05X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: TPL LOG 0924-0926 DATE CODE M8215



(5110SA (VO=0) IN NA: VS DOSE

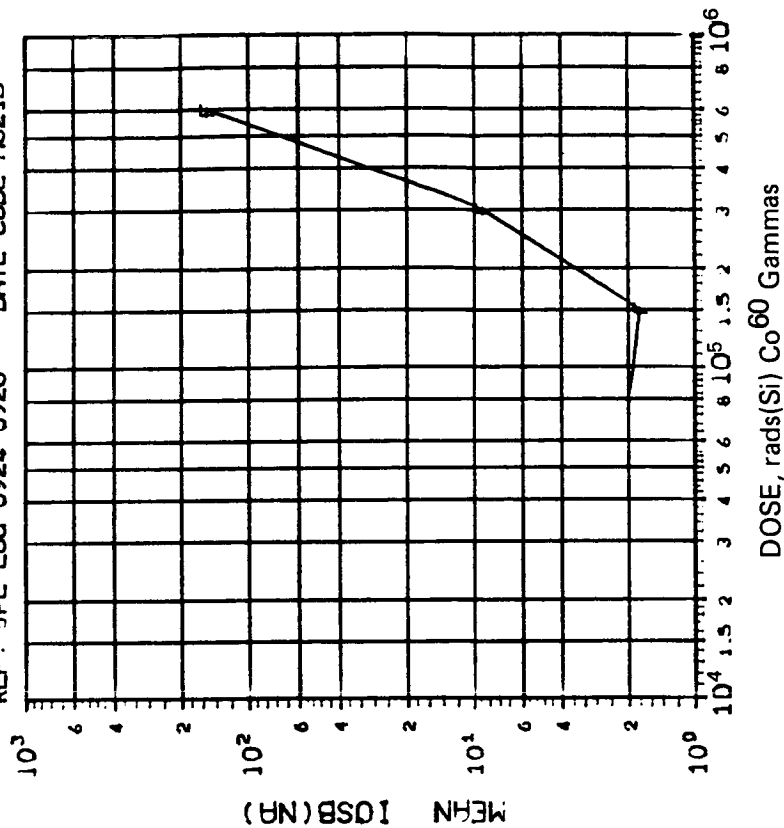
TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
E	1.536	7.254	44.20 ****

INITIAL MEAN VALUE IOSA(NA) = 2.28X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



(6110SB (VO=0) IN NA: VS DOSE

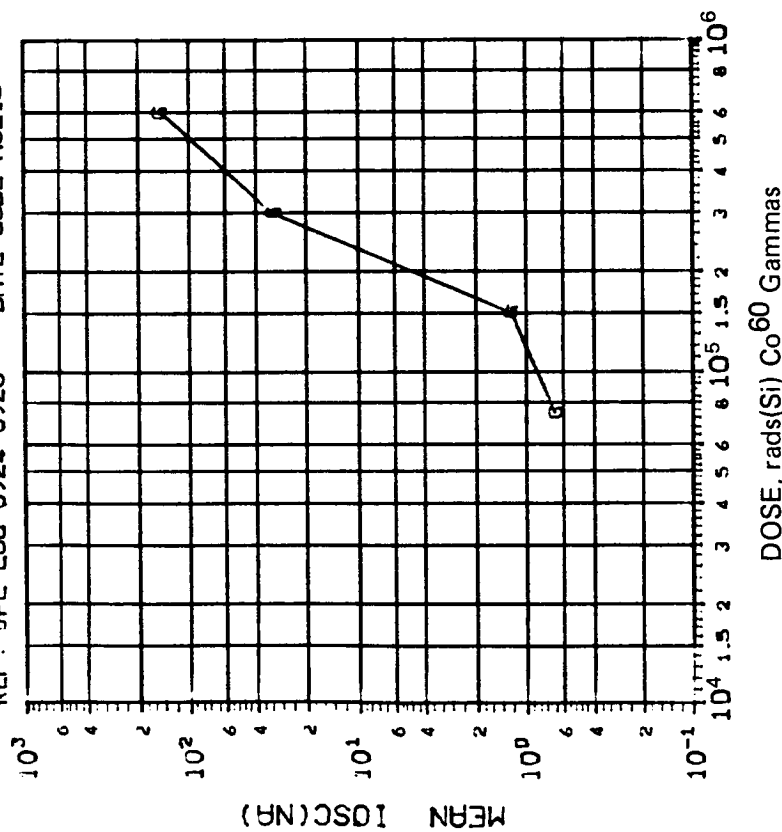
TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
F	1.589	4.303	47.15 69.77 ****

INITIAL MEAN VALUE IOSB(NA) = 2.30X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

FIG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



(7)IOSC (V0=0) IN NA: VS DOSE

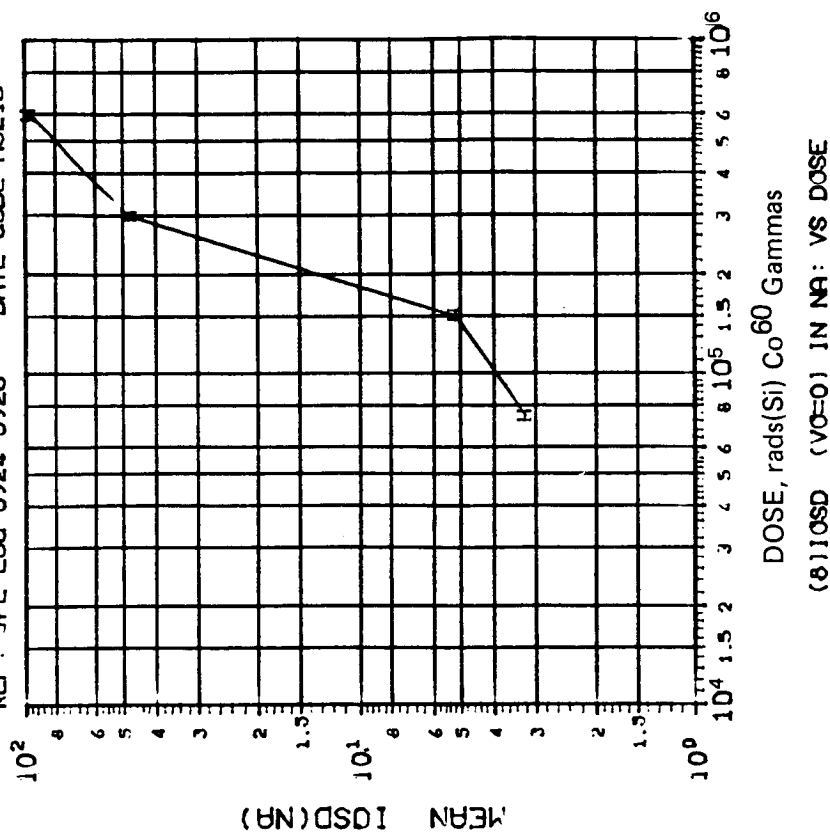
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
G	1.194	2.670
	42.44	204.9

INITIAL MEAN VALUE IOSC(NA) = 1.18X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

FIG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



(8)IOSD (V0=0) IN NA: VS DOSE

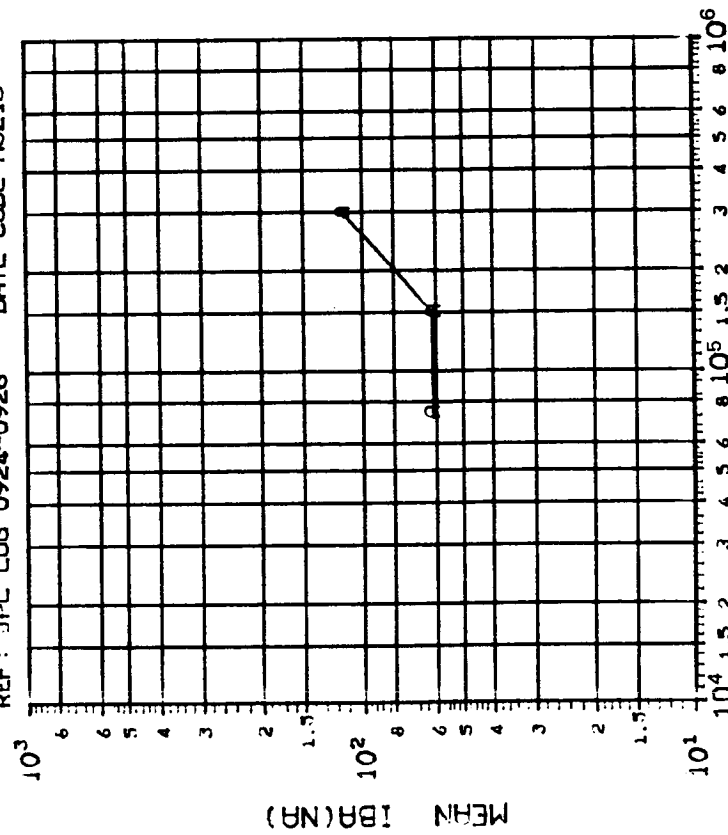
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
H	1.447	2.796
	43.28	19.91

INITIAL MEAN VALUE IOSD(NA) = 3.15X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rad(Si) Co 60 Gammas

(1)IBA (VO=0) IN NA: VS DOSE

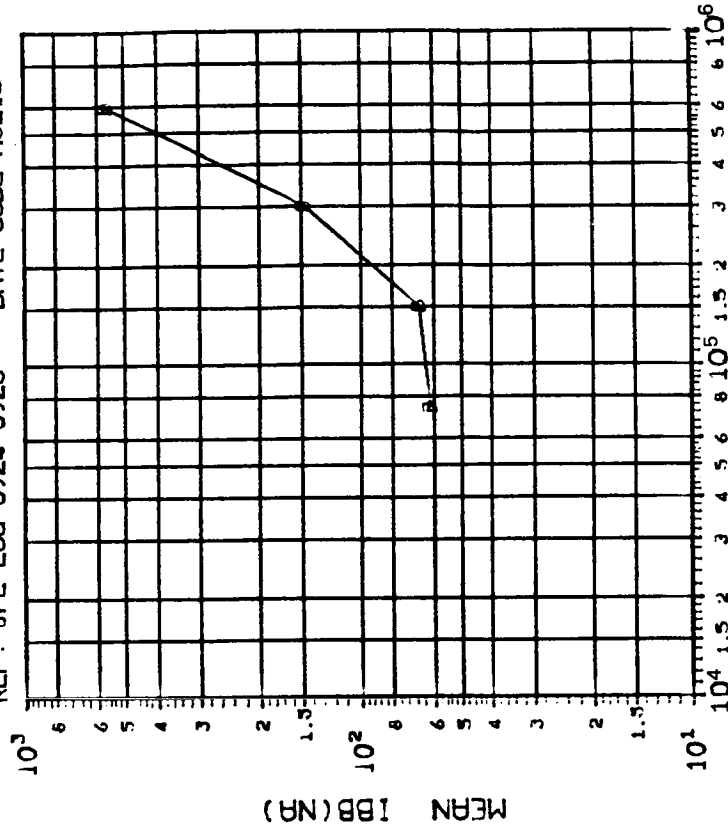
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
	1000
	5.976 15.68 66.29 **** ****

INITIAL MEAN VALUE IBA(NA) = 4.34X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rad(Si) Co 60 Gammas

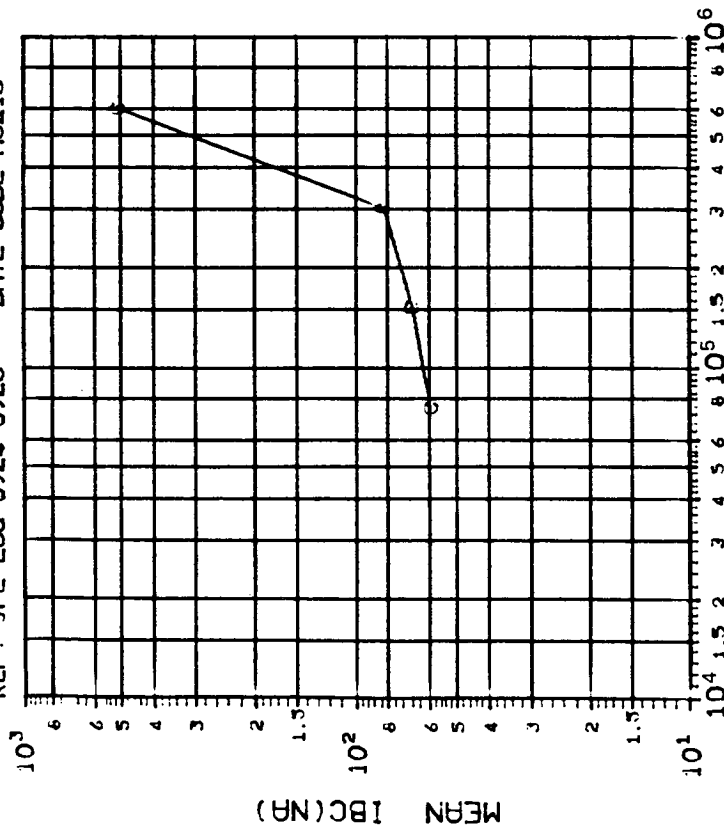
(2)IBB (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
	1000
	9.213 10.11 204.1 215.9 ****

INITIAL MEAN VALUE IBB(NA) = 4.41X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co⁶⁰ Gammas

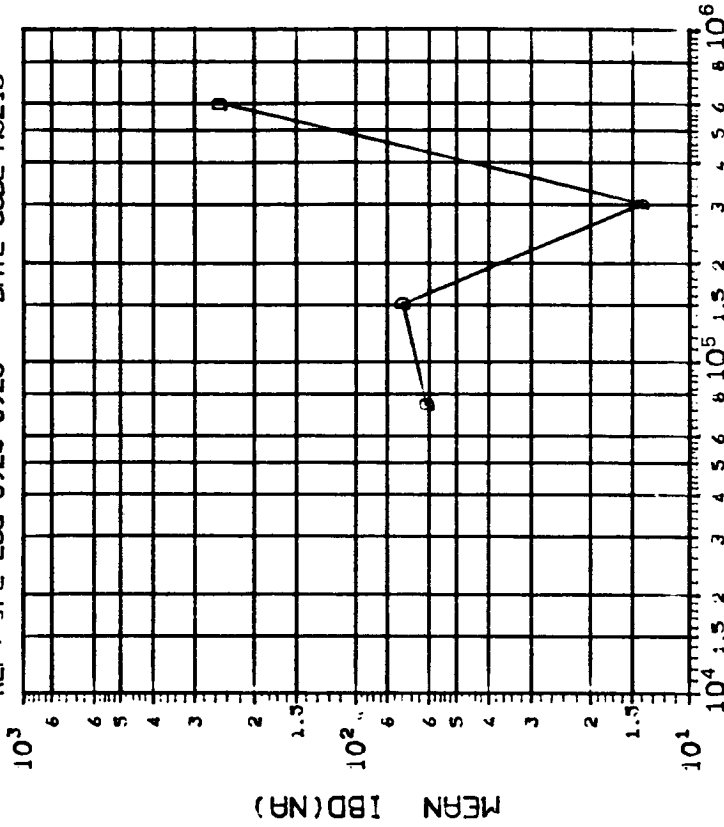
(31)IBC (V0=0) IN NA : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	150
	300	600
	1000	
	7.301 6.410 151.0 207.2 ****	

INITIAL MEAN VALUE IBC(NA) = $4.22 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0924-0926 DATE CODE M8215



DOSE, rads(Si) Co⁶⁰ Gammas

(4)IBD (V0=0) IN NA : VS DOSE

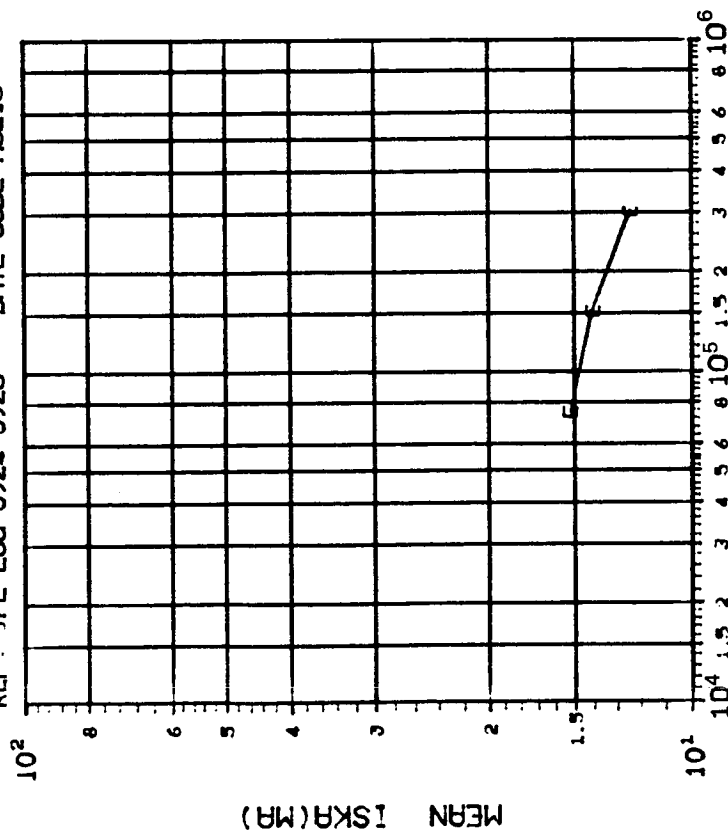
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	75	150
	300	600
	1000	
	6.904 6.982 79.51 113.9 ****	

INITIAL MEAN VALUE IBD(NA) = $4.31 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



(5) ISKA (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

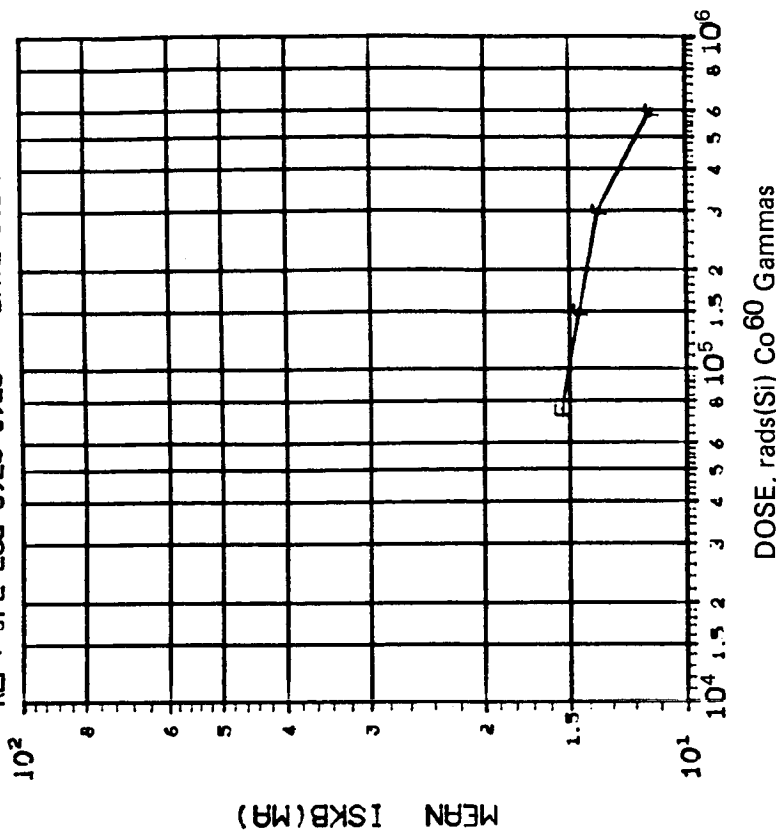
TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
E	3.561	3.742	4.509 ****

INITIAL MEAN VALUE ISKA(MA) = 1.67X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



(6) ISKB (V0=-V+1.5V, VIN=-100MV) IN VS DOSE

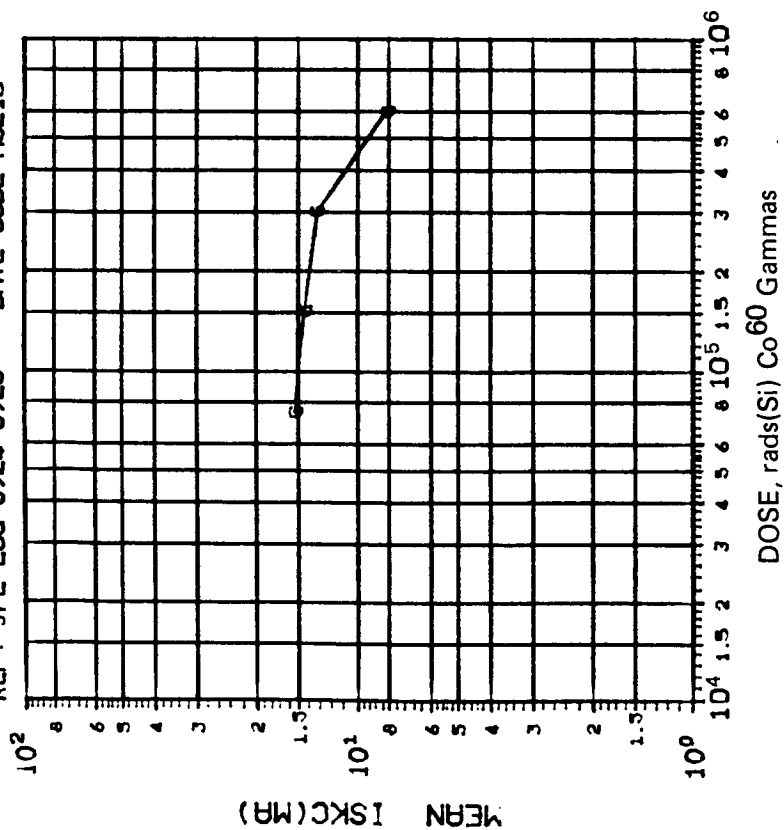
TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	75	150	300
F	3.618	3.710	4.012 4.624 ****

INITIAL MEAN VALUE ISKB(MA) = 1.67X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



(7)ISKC (V0=-V+1.5V,VIN=-100MV) IN VS DOSE

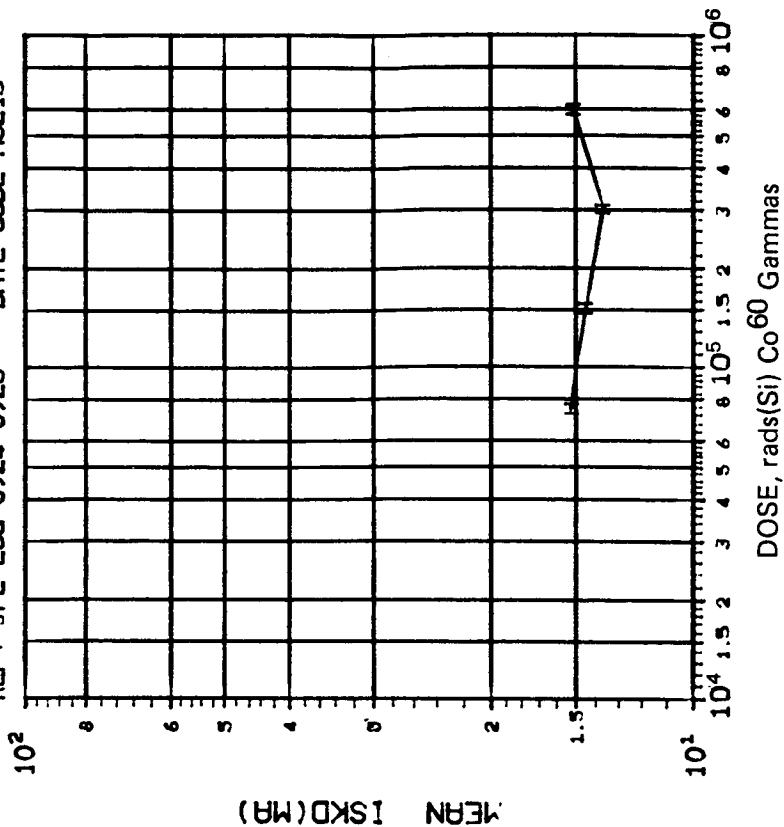
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
G	75	150
	300	600
	1000	

INITIAL MEAN VALUE ISKC(MA) = 1.66X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: NSC 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0924-0926 DATE CODE M8215



(8)ISKD (V0=-V+1.5V,VIN=-100MV) IN VS DOSE

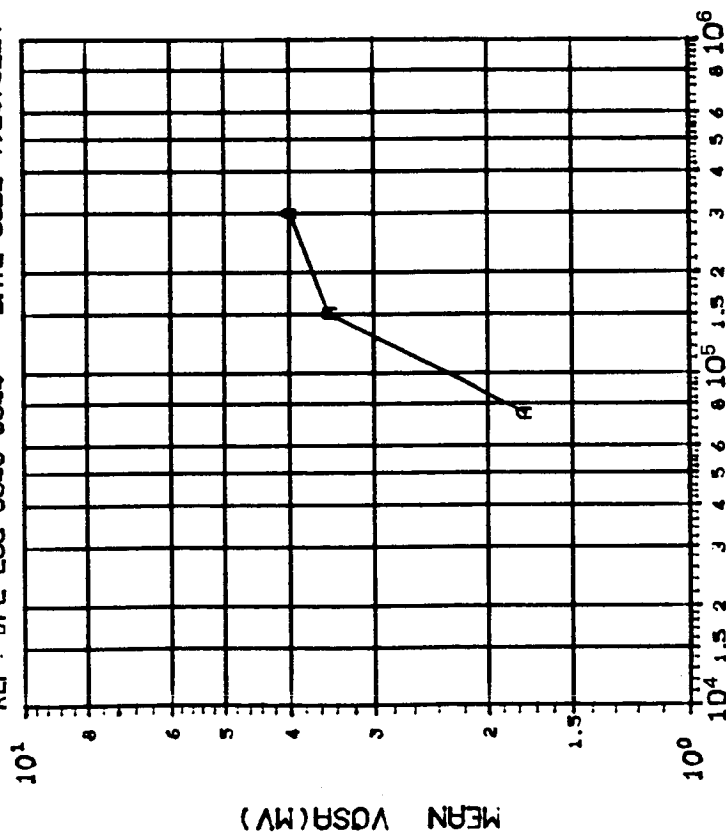
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
H	75	150
	300	600
	1000	

INITIAL MEAN VALUE ISKD(MA) = 1.66X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rad(Si) Co 60 Gammas

(1)VOSR (VO=0) IN MV: VS DOSE

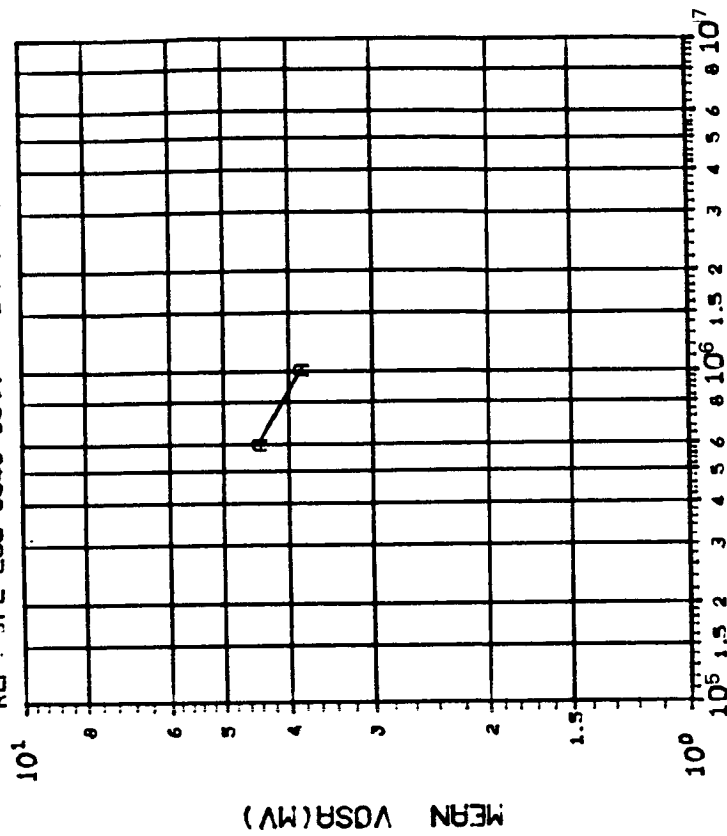
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
A	2.102 2.717 1.492

INITIAL MEAN VALUE VOSR(MV) = 1.40×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rad(Si) Co 60 Gammas

(1)VOSR (VO=0) IN MV: VS DOSE

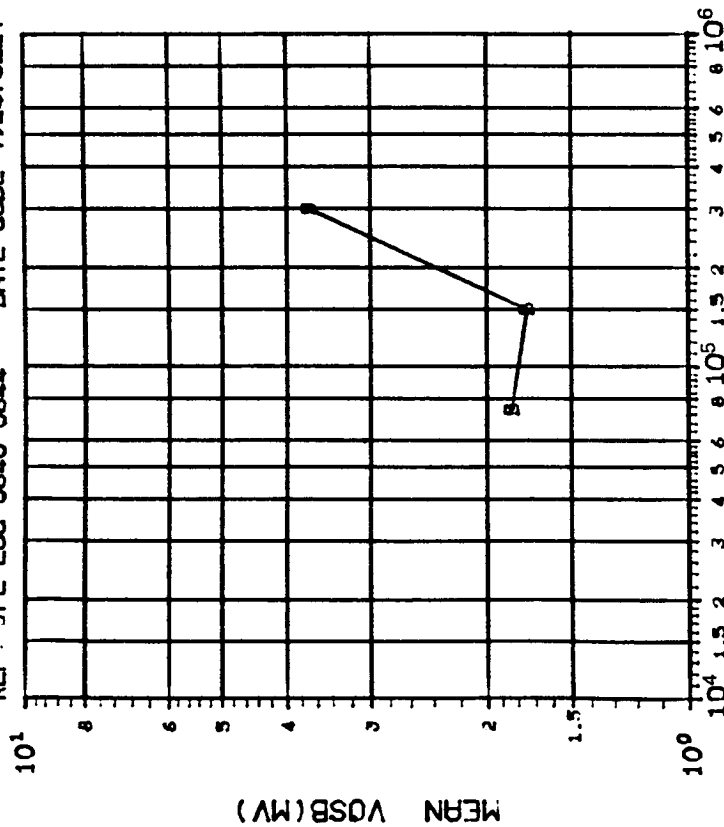
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
A	1.394 .7260 ***

INITIAL MEAN VALUE VOSR(MV) = 1.40×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

(2)VOSB (V0=0) IN MV: VS DOSE

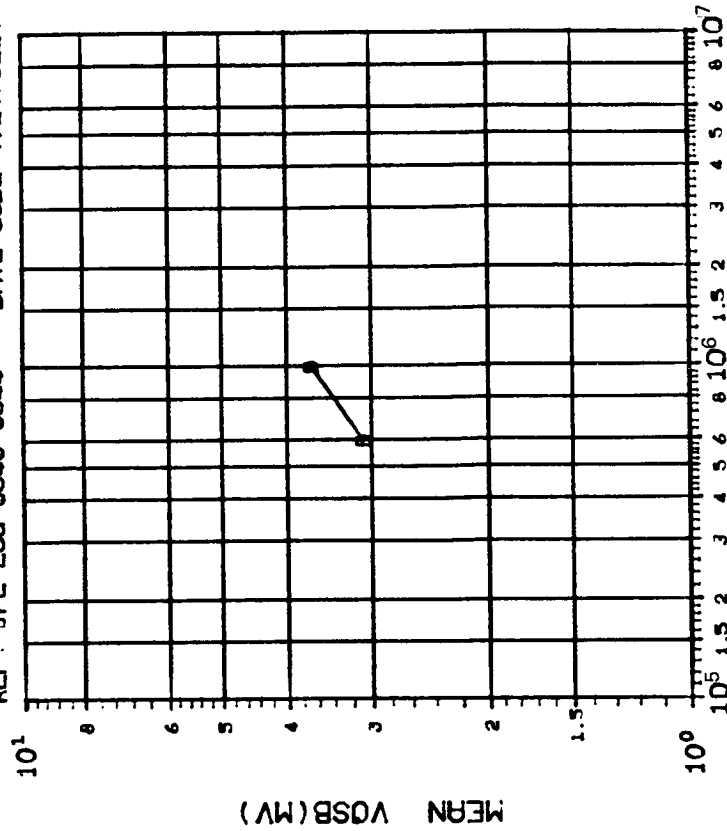
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
B	4.272 1.054 1.946

INITIAL MEAN VALUE VOSB(MV) = 2.73×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

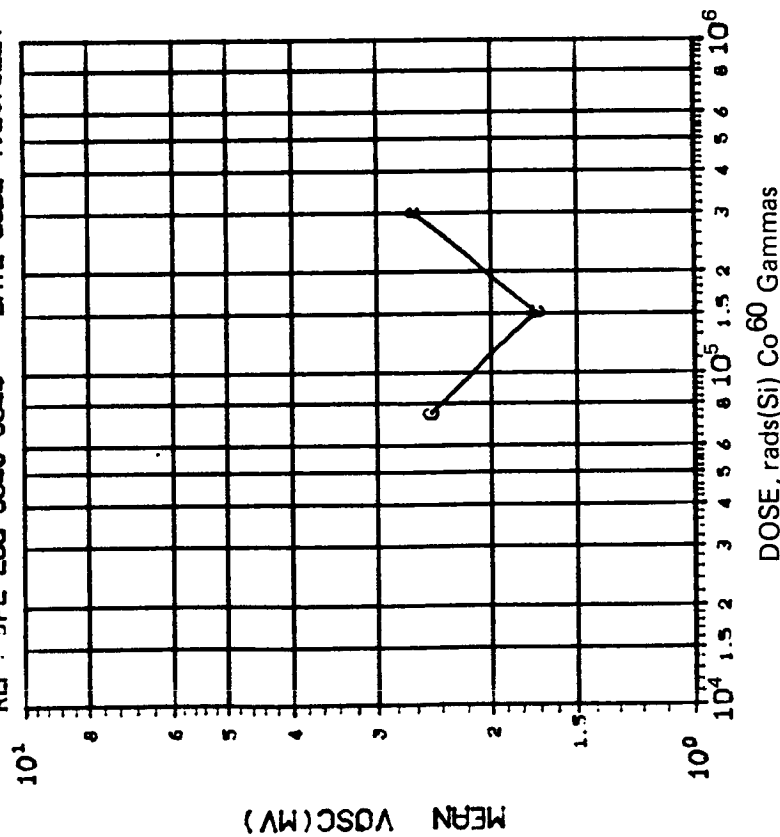
(2)VOSB (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
B	1.923 2.168 ****

INITIAL MEAN VALUE VOSB(MV) = 2.73×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0840-0844 DATE CODE 7924/8227



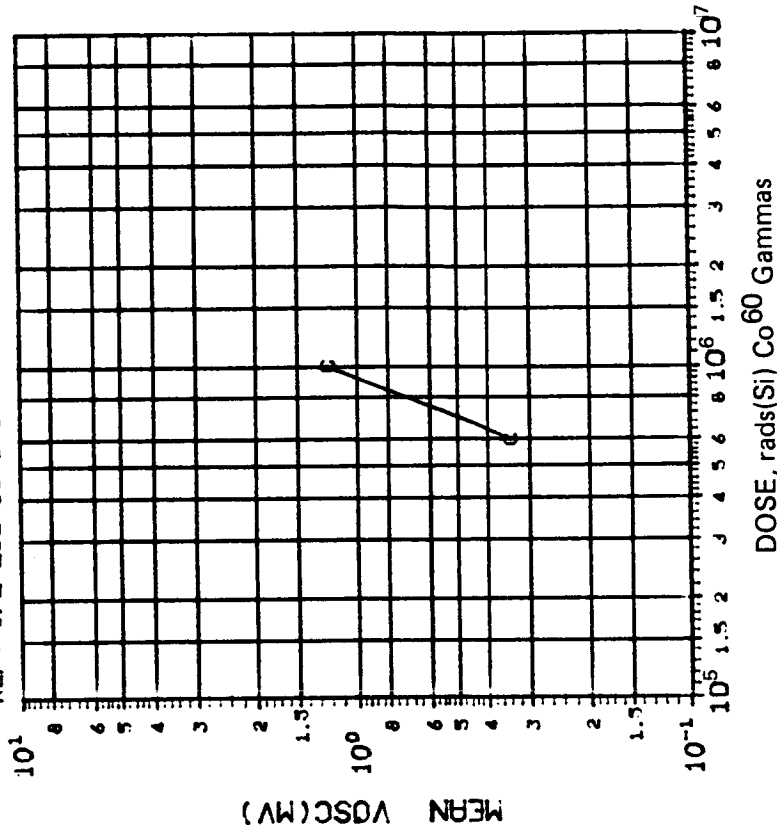
(3)VOSC (V0=0) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
C	4.606 2.919 4.074

INITIAL MEAN VALUE VOSC(MV) = 1.70×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0840-0844 DATE CODE 7924/8227



(3)VOSC (V0=0) IN MV: VS DOSE

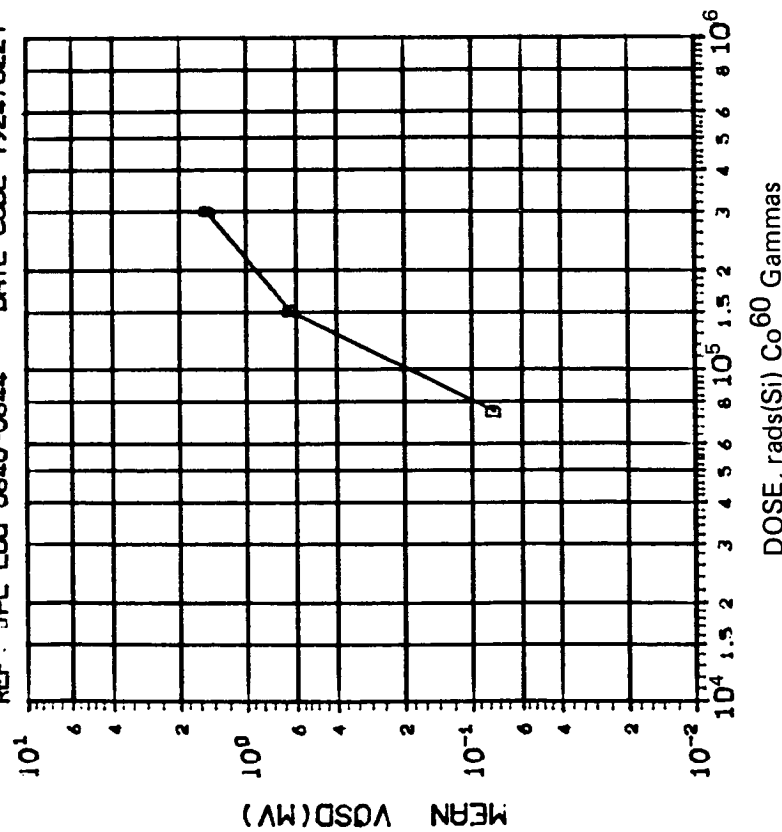
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
C	3.276 4.070 ****

INITIAL MEAN VALUE VOSC(MV) = 1.70×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(4)VOSD (VO=0) IN MV: VS DOSE

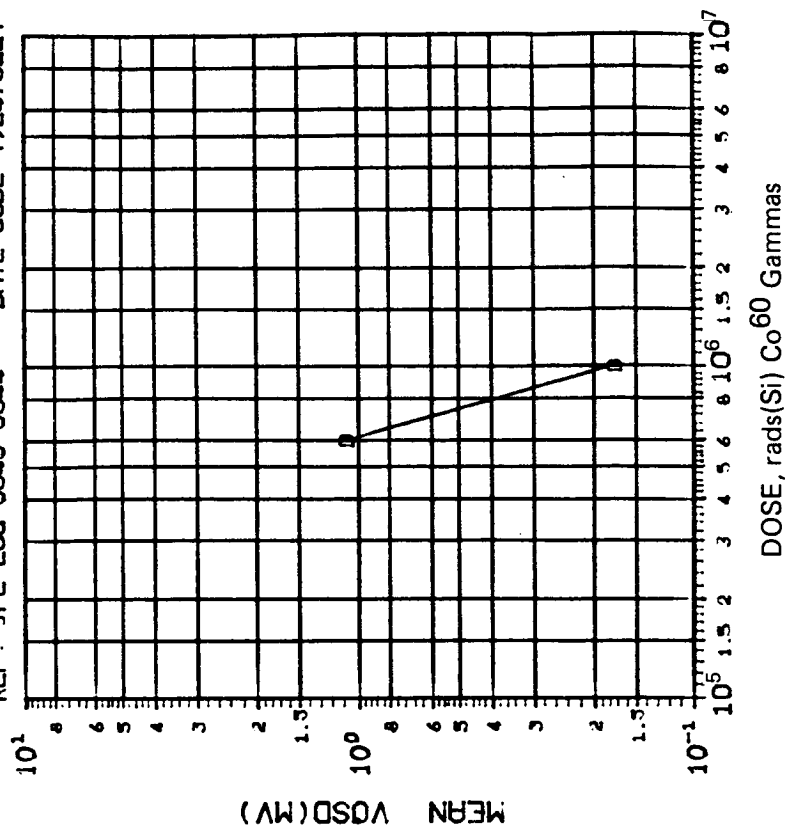
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
D	1.456	2.632 4.297

INITIAL MEAN VALUE VOSD(MV) = 3.51×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(4)VOSD (VO=0) IN MV: VS DOSE

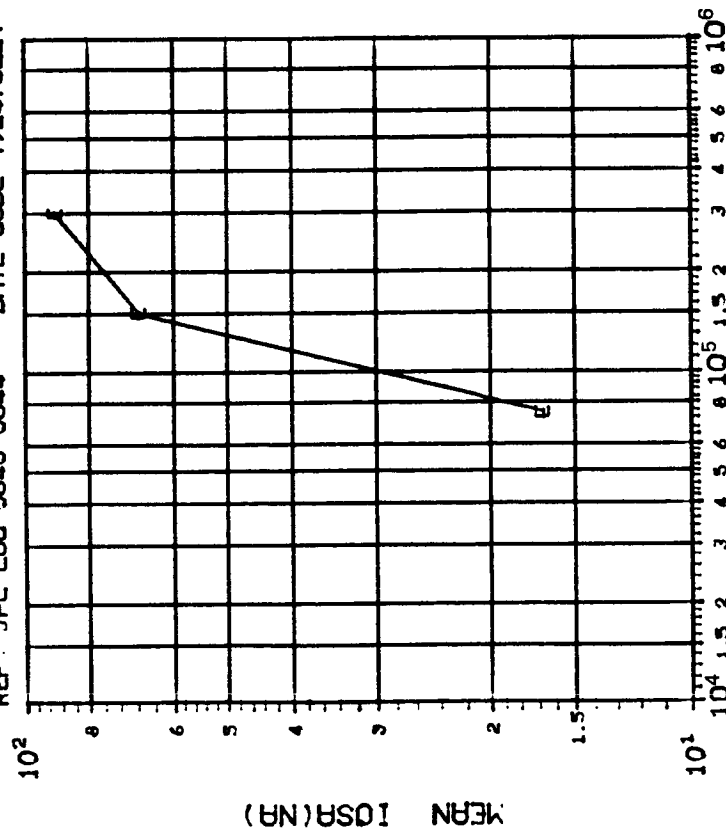
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000 2000
D	4.693	3.943 ***

INITIAL MEAN VALUE VOSD(MV) = 3.51×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rad(Si) Co 60 Gammas

(5)IOSR (VO=0) IN NA: VS DOSE

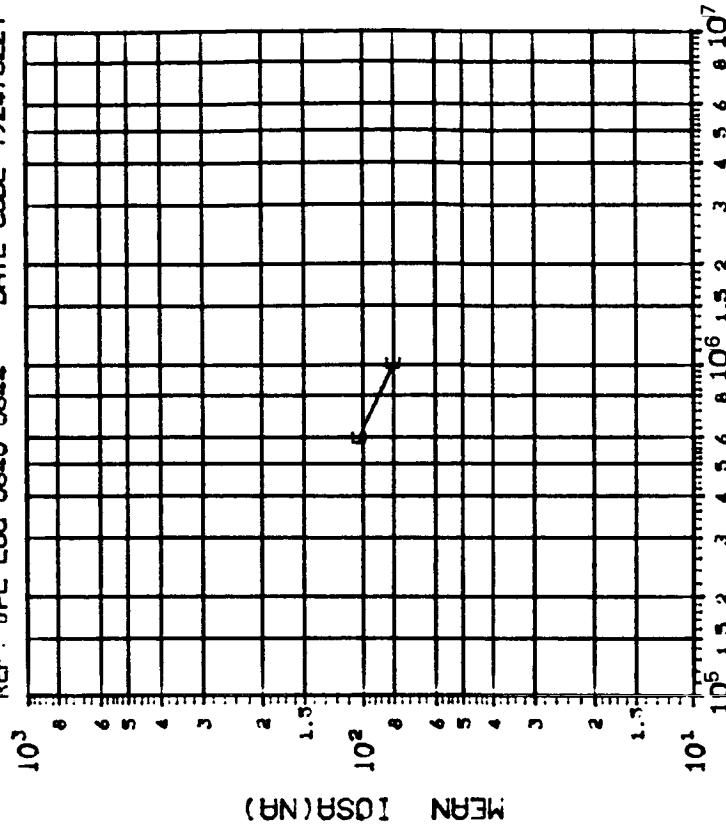
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	15.69 51.67 34.03

INITIAL MEAN VALUE IOSR(NA) = 8.99×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rad(Si) Co 60 Gammas

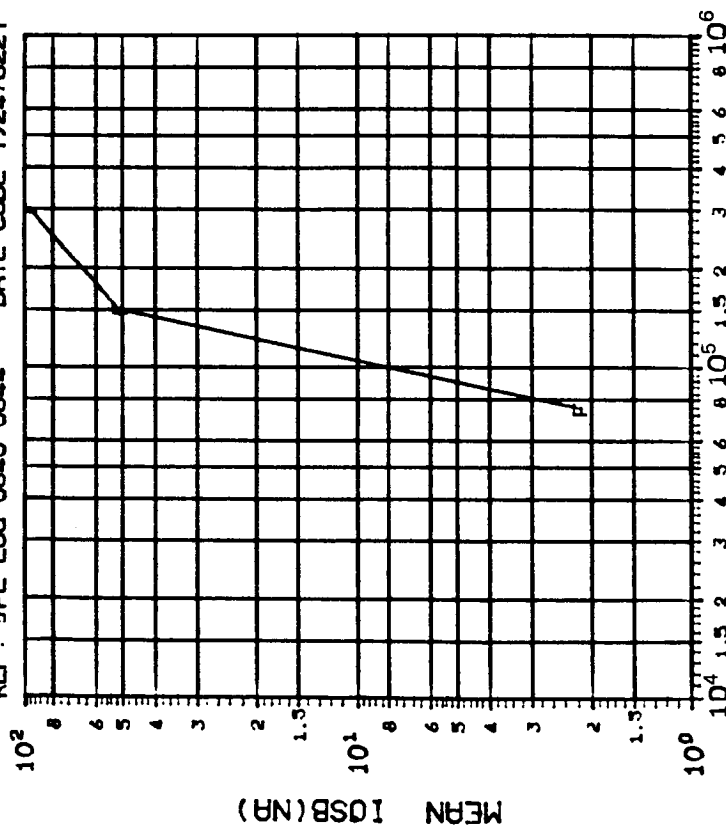
(5)IOSR (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	35.22 10.55 ****

INITIAL MEAN VALUE IOSR(NA) = 8.99×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0840-0844 DATE CODE 7924/8227



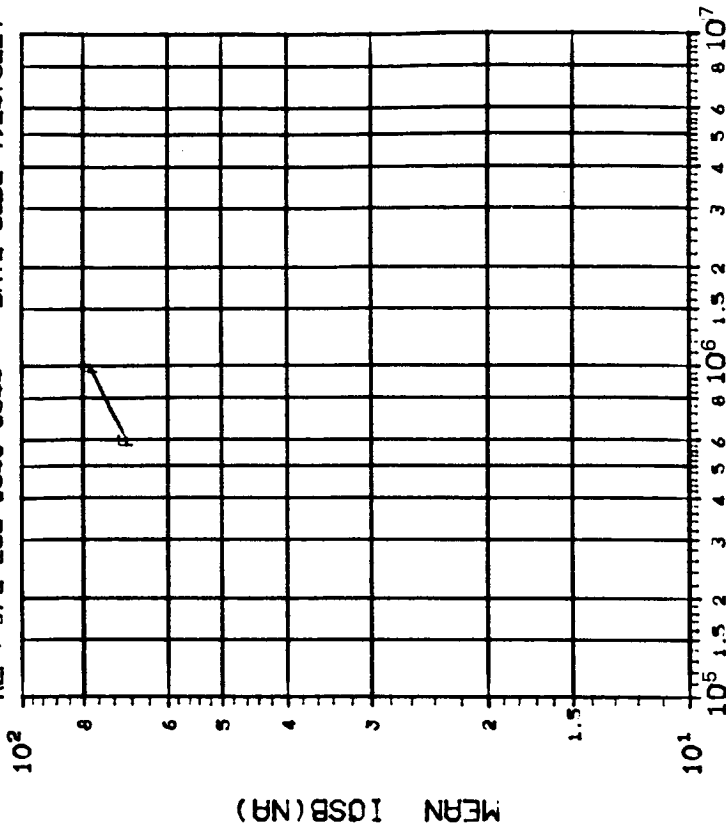
(6)IOSB (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	20.09 43.92 64.77

INITIAL MEAN VALUE IOSB(NA) = 8.91×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0840-0844 DATE CODE 7924/8227



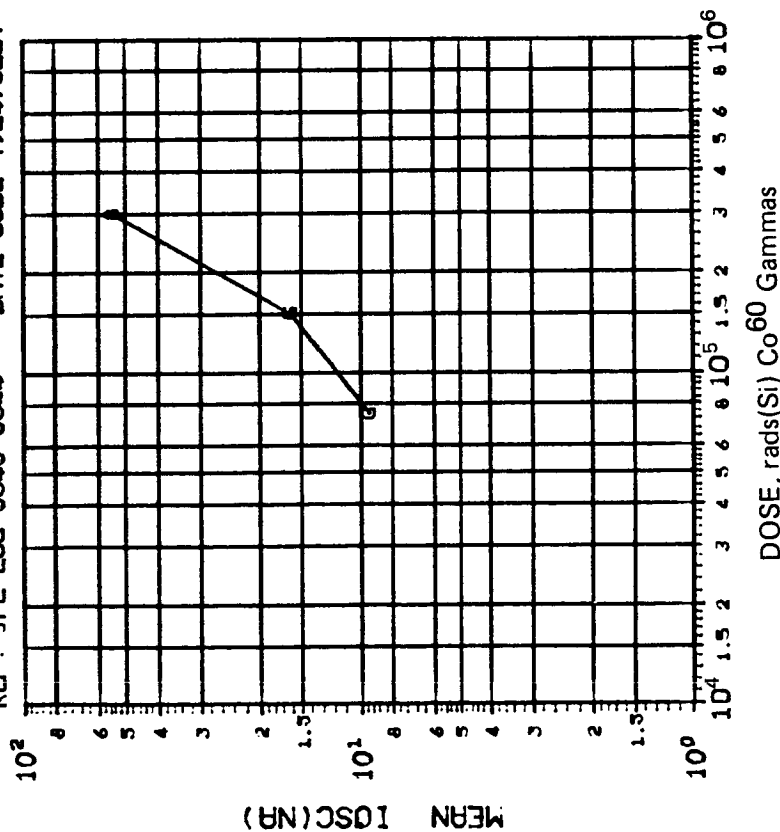
(6)IOSB (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	40.62 53.26 ****

INITIAL MEAN VALUE IOSB(NA) = 8.91×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

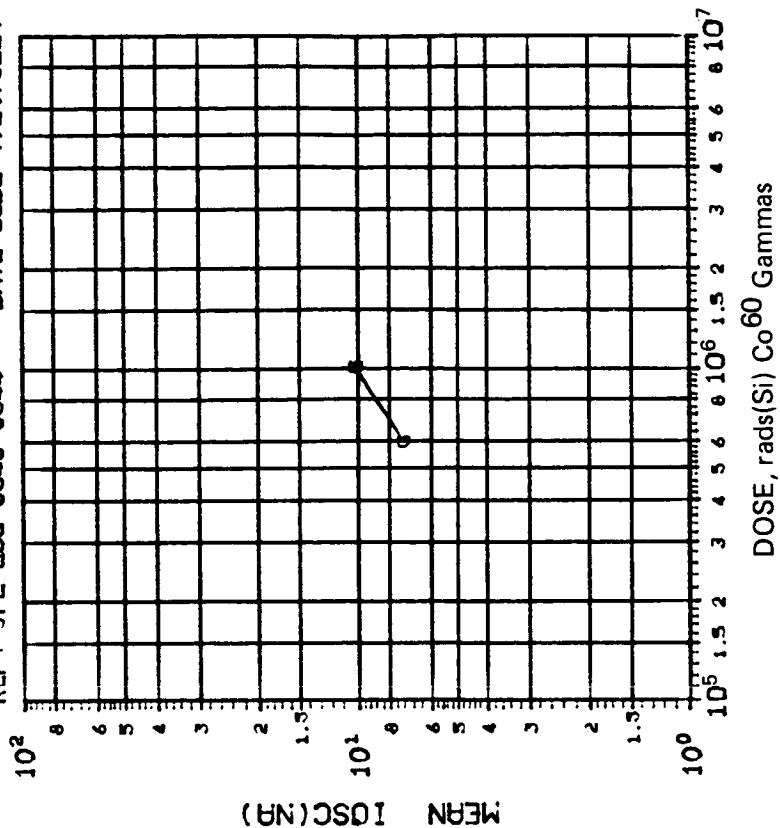
(7)IOSC (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
G	33.20	53.21 115.0

INITIAL MEAN VALUE IOSC(NA) = 7.08×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0840-0844 DATE CODE 7924/8227



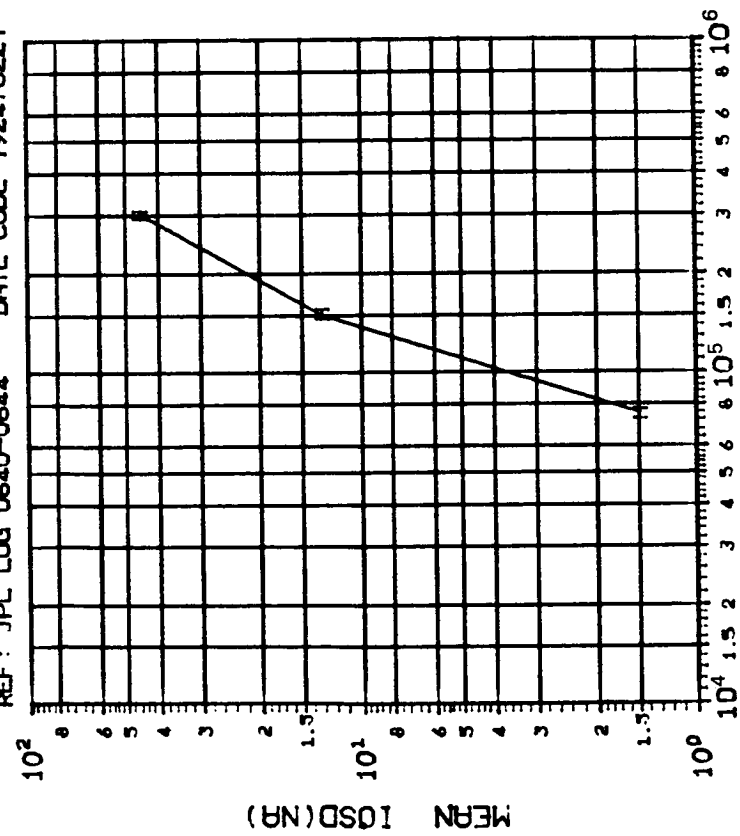
DOSE, rads(Si) Co 60 Gammas

(7)IOSC (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000 2000
G	90.43	103.6 ***

INITIAL MEAN VALUE IOSC(NA) = 7.08×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227

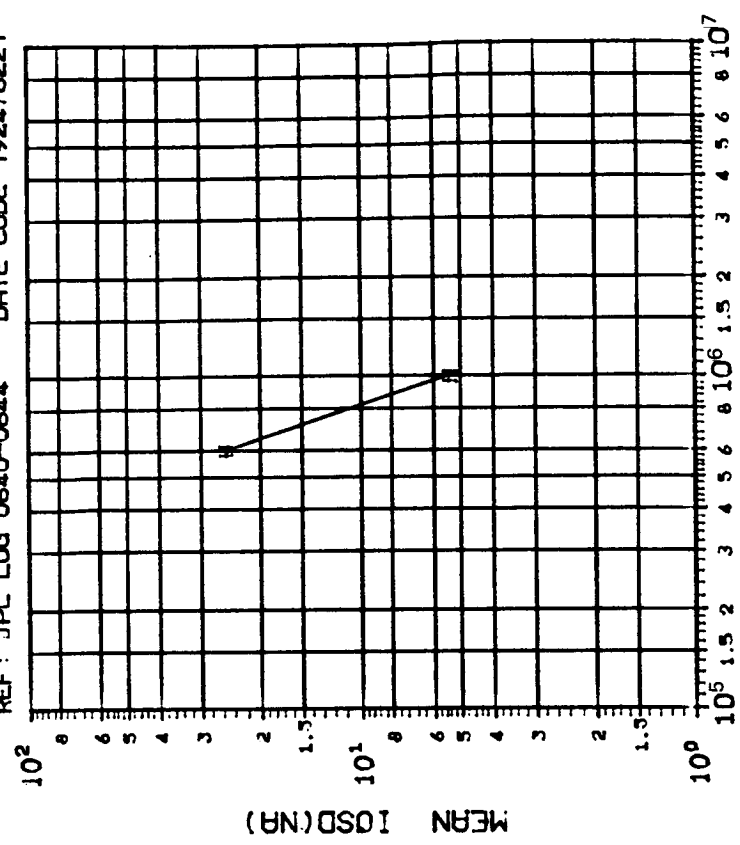


DOSE, rads(Si) Co 60 Gammas
 (8)IOSD (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	13.45 51.37 127.4

INITIAL MEAN VALUE IOSD(NA) = 7.99×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-21-83
 REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas
 (8)IOSD (VO=0) IN NA: VS DOSE

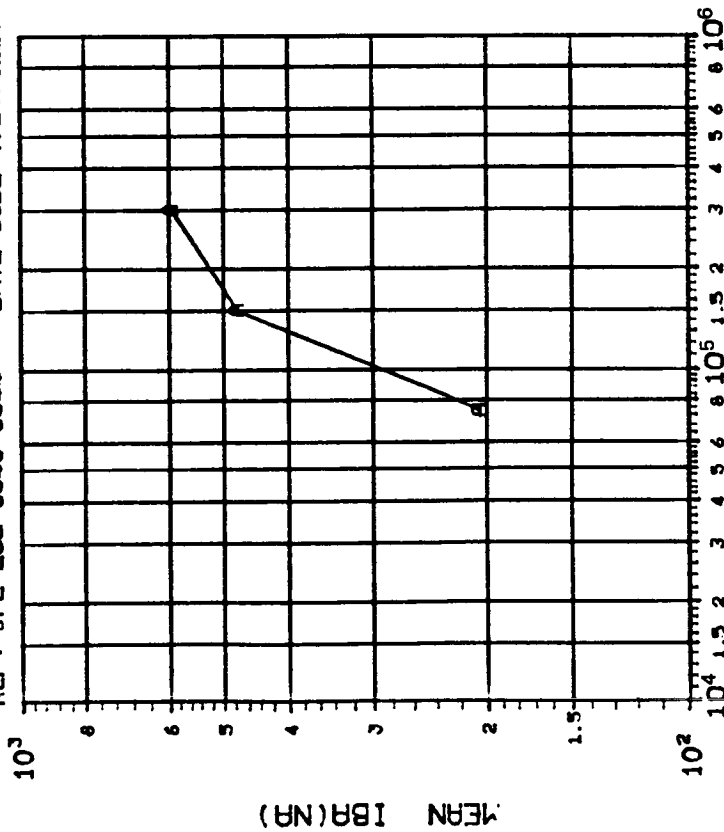
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	120.0 108.3 ***

INITIAL MEAN VALUE IOSD(NA) = 7.99×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(1) IBA (VO=0) IN NA VS DOSE

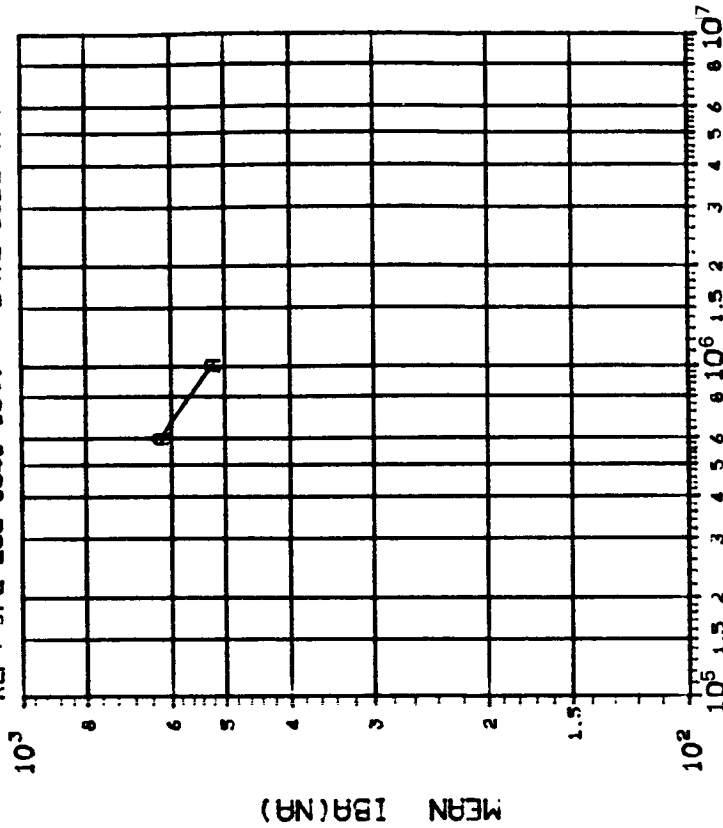
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	76.72 165.5 167.9

INITIAL MEAN VALUE IBA(NR) = $2.62 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(1) IBA (VO=0) IN NA VS DOSE

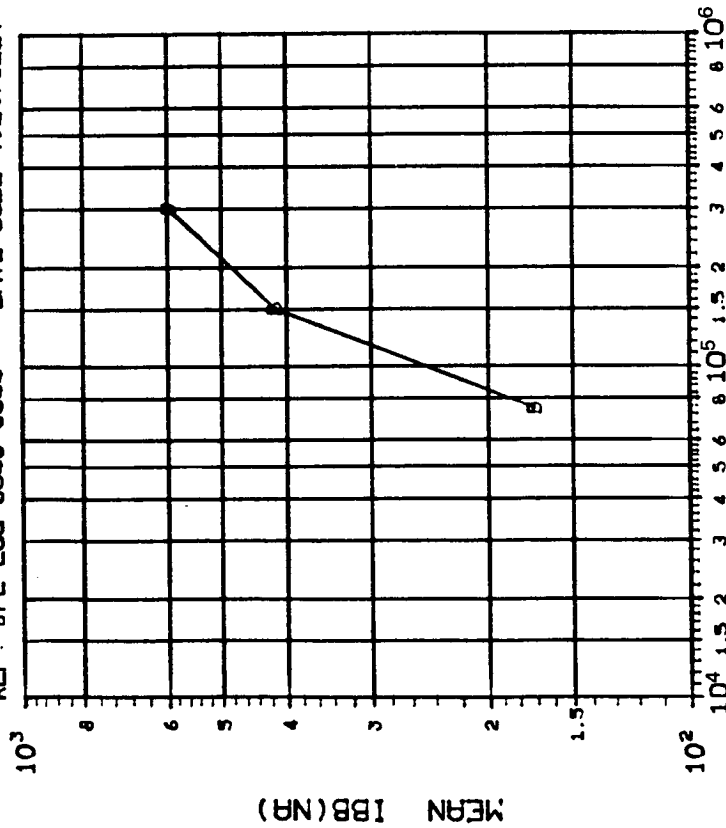
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	199.3 50.62 ***

INITIAL MEAN VALUE IBA(NR) = $2.62 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rad(Si) Co⁶⁰ Gammas

(2)IBB (VO=0) IN NA: VS DOSE

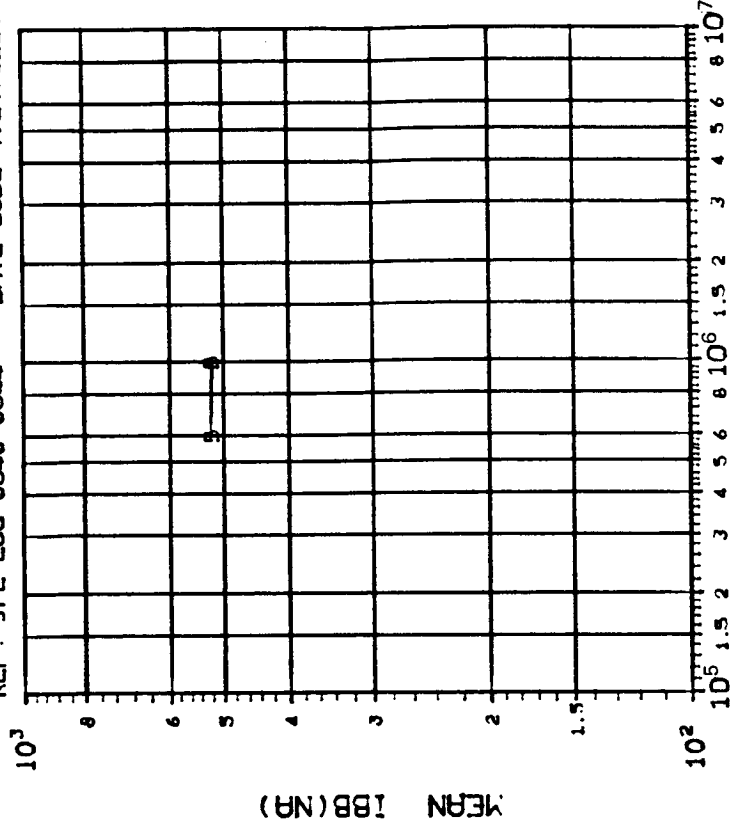
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150 300
54.77 189.0 300.3	

INITIAL MEAN VALUE IBB(NA) = $2.50 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rad(Si) Co⁶⁰ Gammas

(2)IBB (VO=0) IN NA: VS DOSE

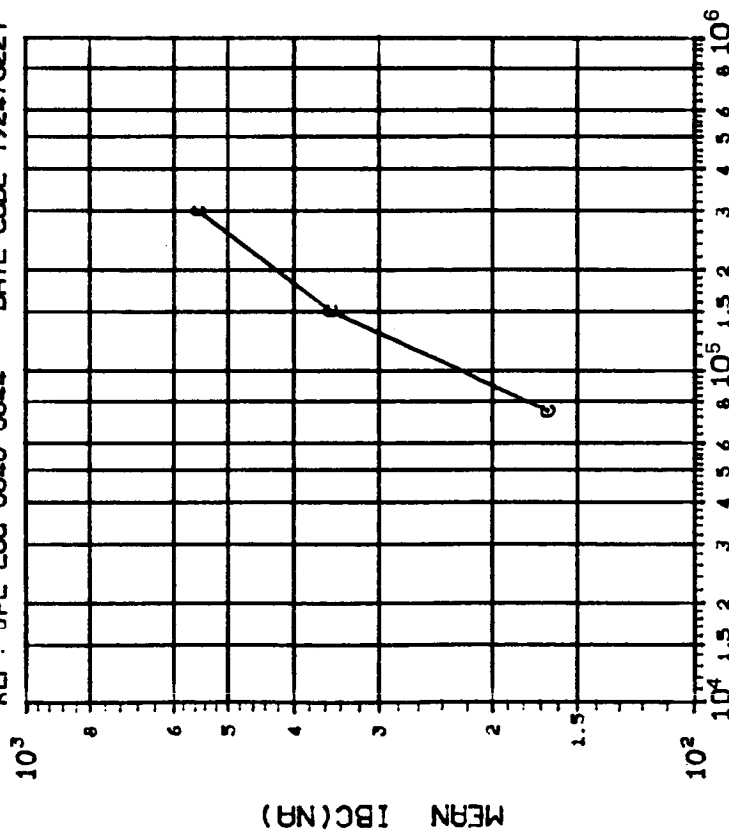
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	286.0 261.6 ****

INITIAL MEAN VALUE IBB(NA) = $2.50 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(3)IBC (VO=0) IN NA: VS DOSE

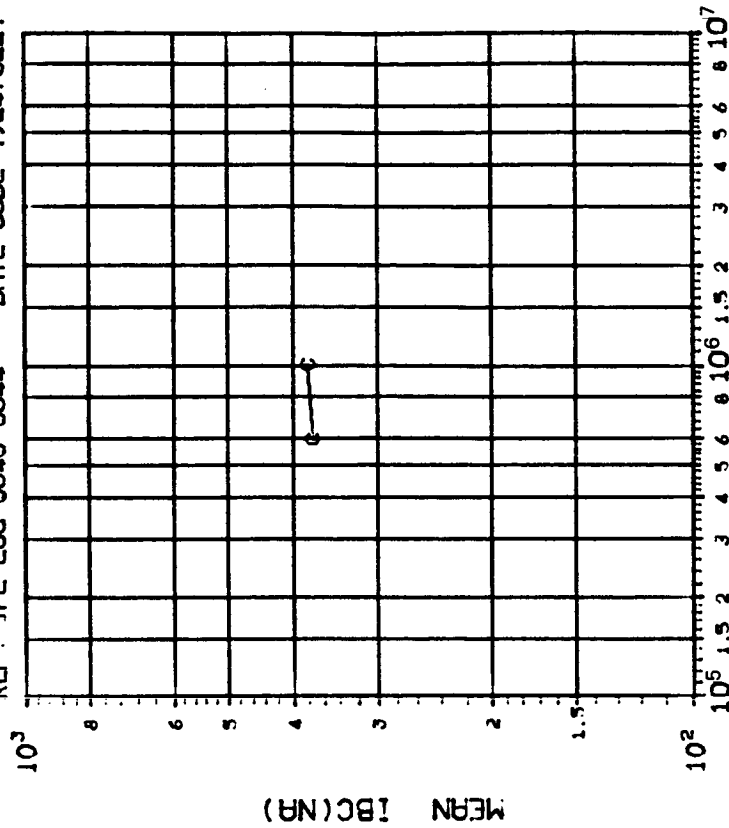
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75 150 300
	63.77 178.6 311.1

INITIAL MEAN VALUE IBC(NR) = $2.40 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(3)IBC (VO=0) IN NA: VS DOSE

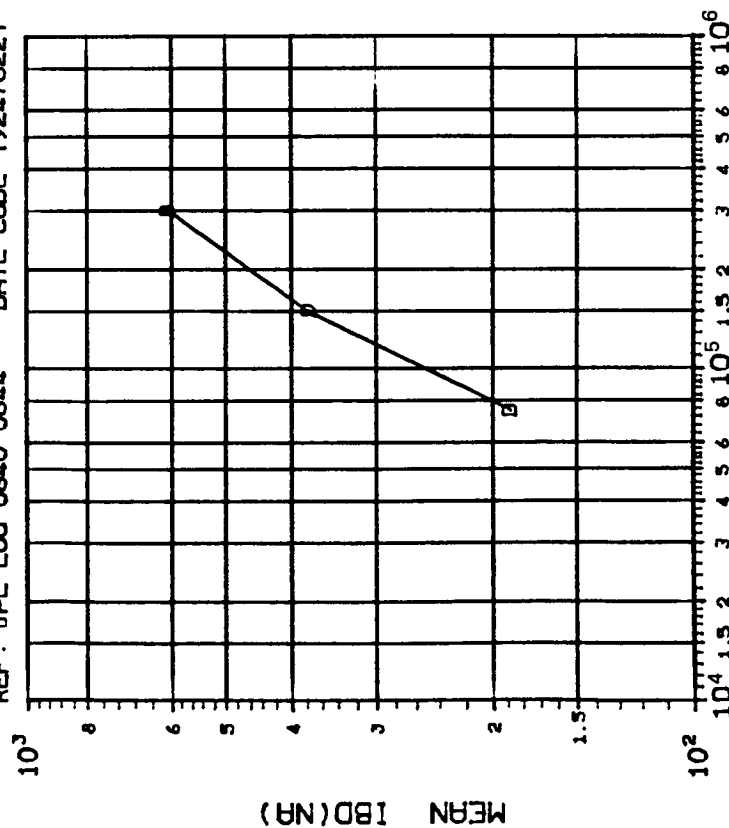
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	242.6 209.2 ***

INITIAL MEAN VALUE IBC(NR) = $2.40 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(4)IBD (VO=0) IN NA: VS DOSE

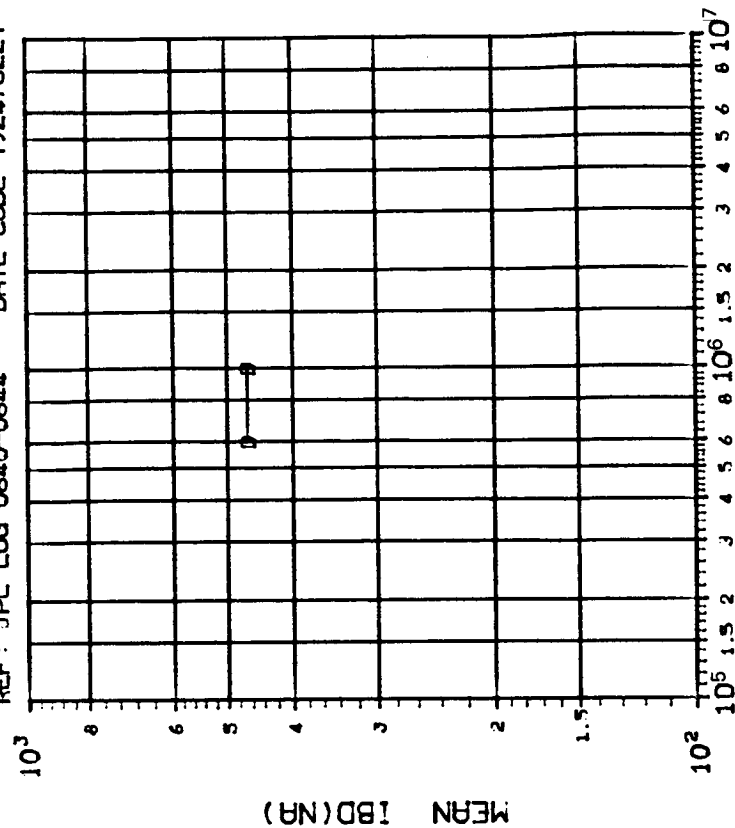
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
74.53 156.6 272.1	

INITIAL MEAN VALUE IBD(NA) = $2.60 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(4)IBD (VO=0) IN NA: VS DOSE

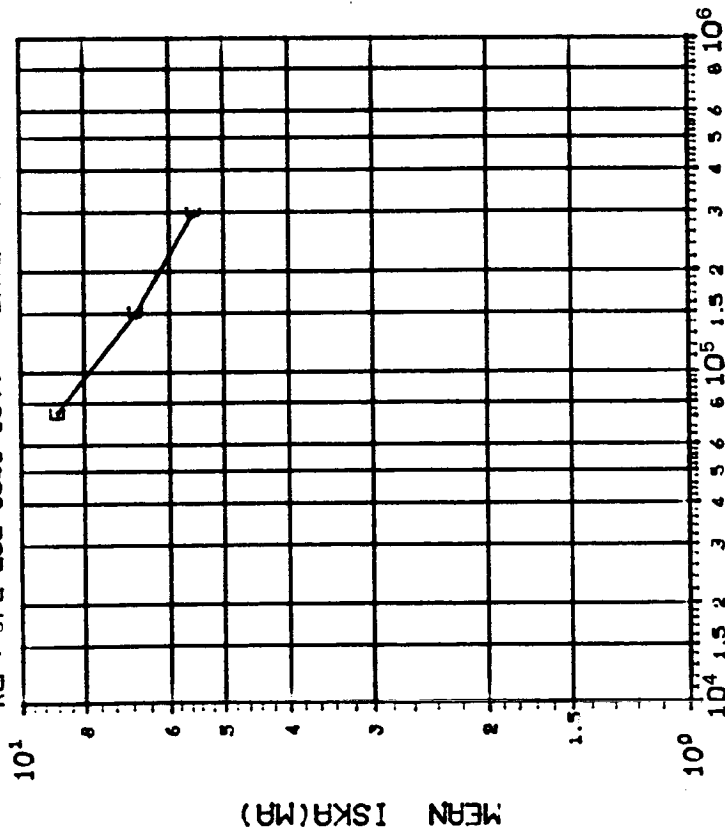
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600
	1000
	2000
194.5 162.1 ****	

INITIAL MEAN VALUE IBD(NA) = $2.60 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(5) ISKA (V₀=-V+1.5V, V_{IN}=-100MV) IN VS DOSE

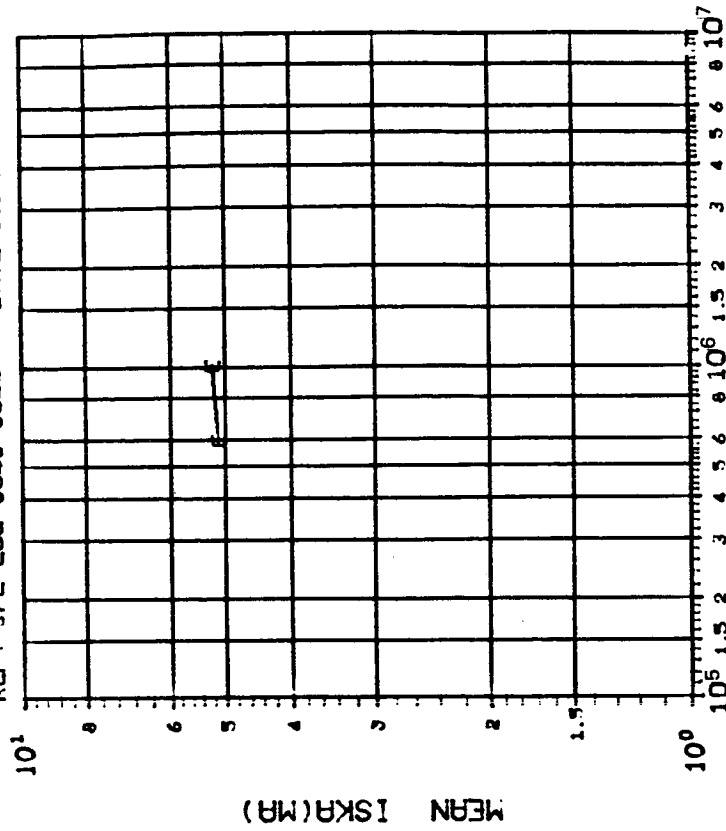
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	1.166 .7103 .9229

INITIAL MEAN VALUE ISKA(MR) = 1.20X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

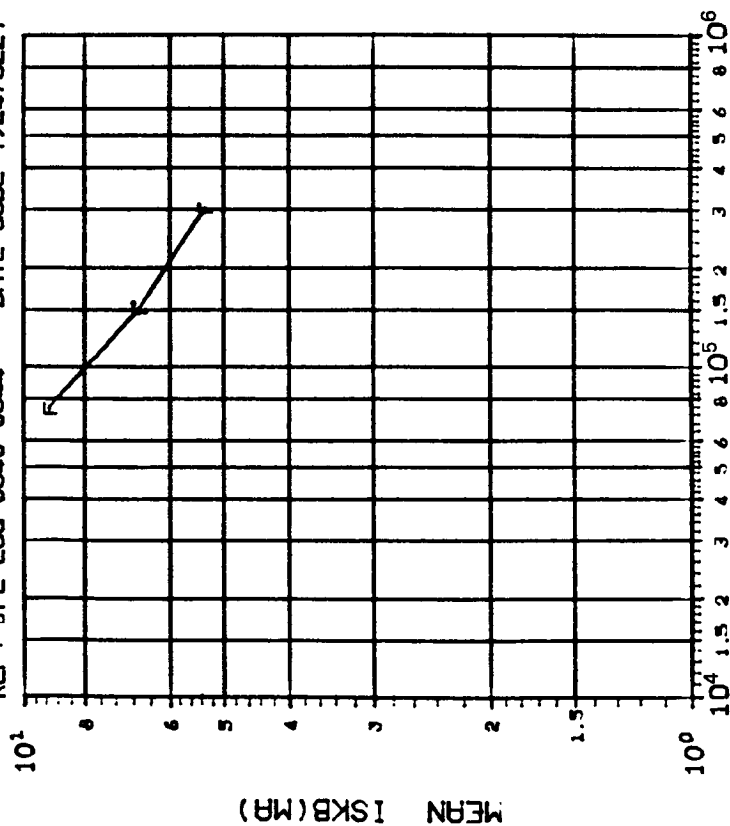
(5) ISKA (V₀=-V+1.5V, V_{IN}=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	1.019 .6361 ****

INITIAL MEAN VALUE ISKA(MR) = 1.20X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

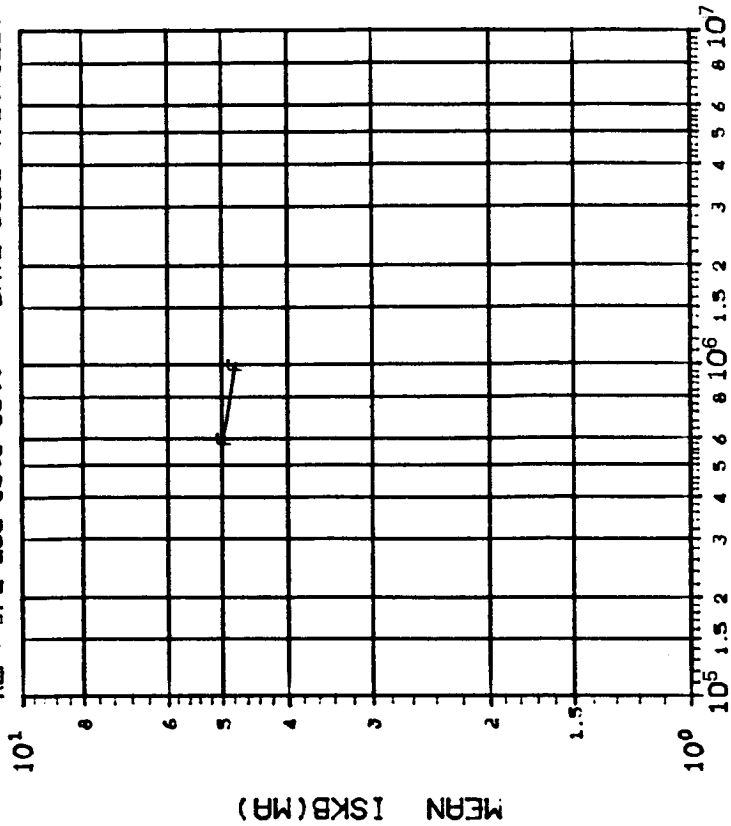
(6) ISKB (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
F	2.166 .7027 .6306

INITIAL MEAN VALUE ISKB(MR) = $1.17 \times 10^{4.5}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

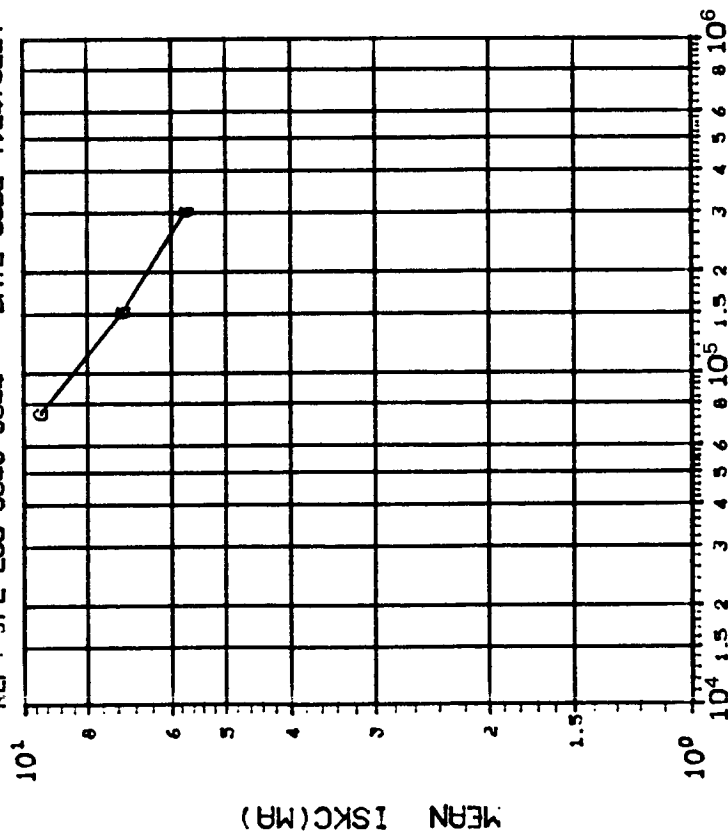
(6) ISKB (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
F	1.063 1.016 ****

INITIAL MEAN VALUE ISKB(MR) = $1.17 \times 10^{4.5}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

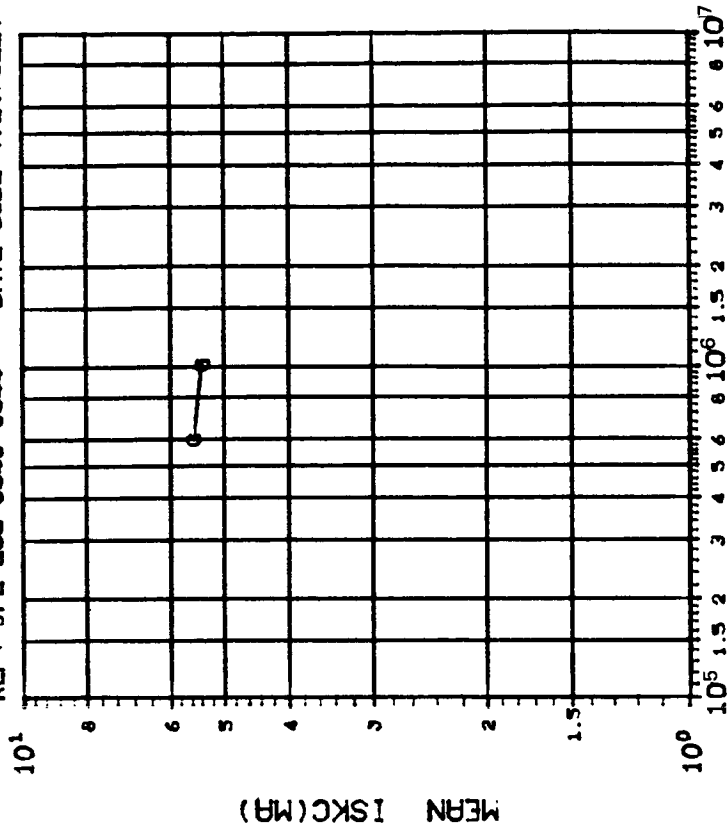
(7)ISKC (V_{CE}=-V+1.5V, V_{INE}=-100mV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75 150 300
G	1.906 .6204 .6178

INITIAL MEAN VALUE ISKC(MA) = 1.17X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-21-83
REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(7)ISKC (V_{CE}=-V+1.5V, V_{INE}=-100mV) IN VS DOSE

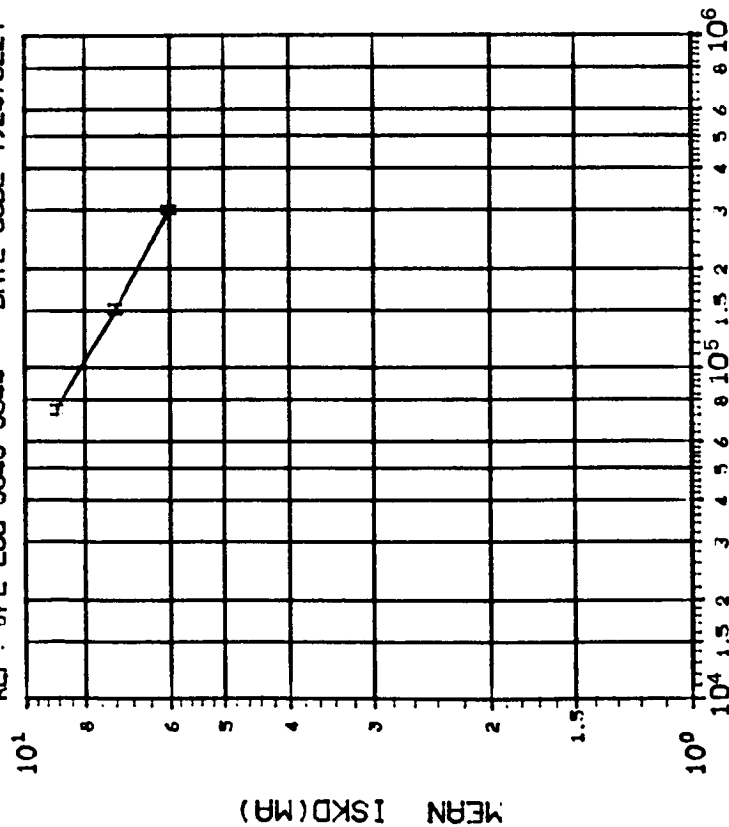
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600 1000 2000
G	1.047 .9406 ****

INITIAL MEAN VALUE ISKC(MA) = 1.17X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PM1 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(8)ISKD (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

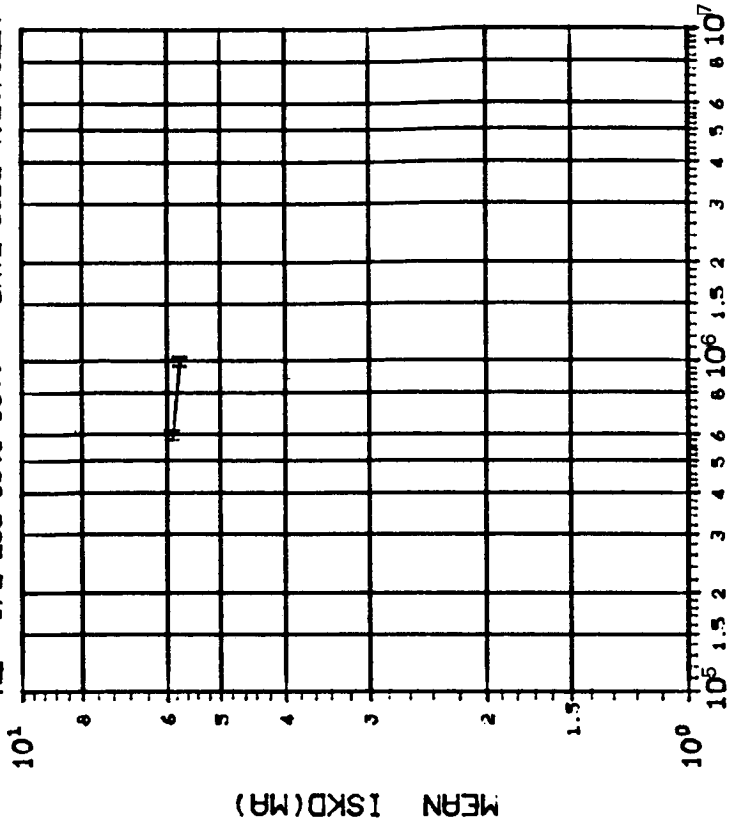
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	.7559 .6734 .9683

INITIAL MEAN VALUE ISKD(MR) = $1.15 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PM1 9 DEVICES TEST DATE 02-21-83

REF: JPL LOG 0840-0844 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(8)ISKD (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

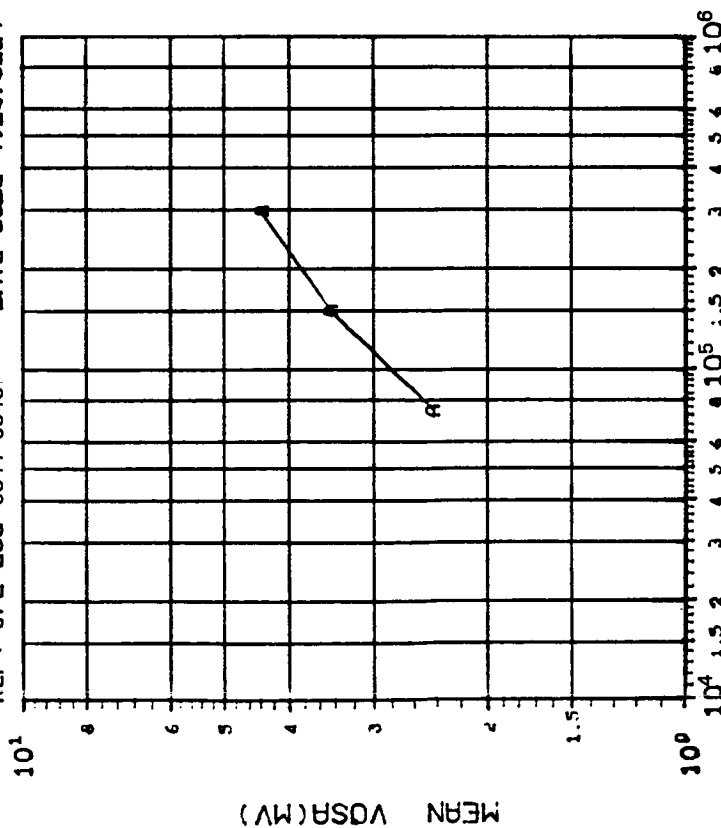
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	1.175 1.011 ***

INITIAL MEAN VALUE ISKD(MR) = $1.15 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(1) VOSR (V0=0) IN MV: VS DOSE

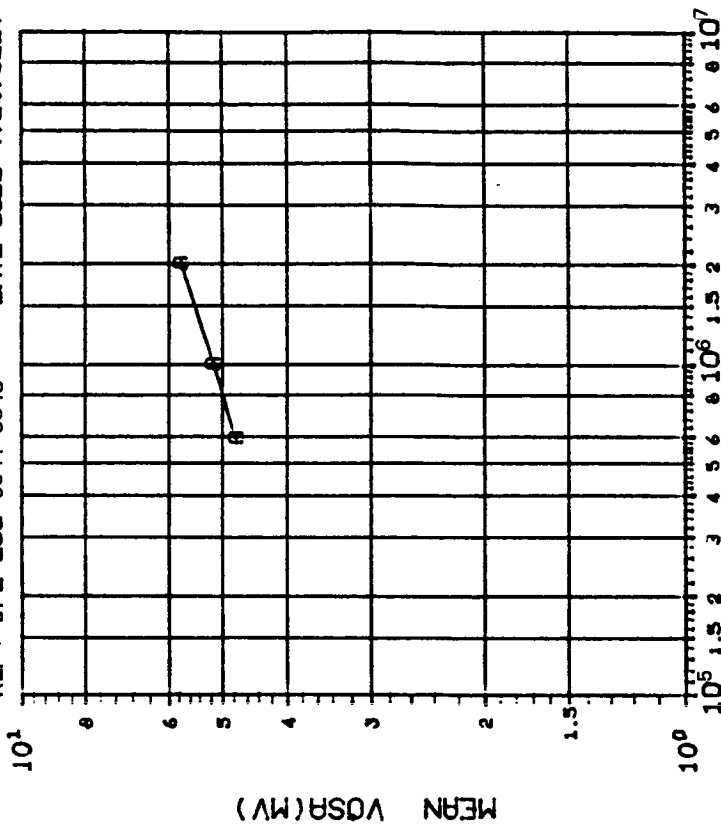
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
1.643 .8088 .4529	

INITIAL MEAN VALUE VOSR(MV) = 3.22×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(1) VOSR (V0=0) IN MV: VS DOSE

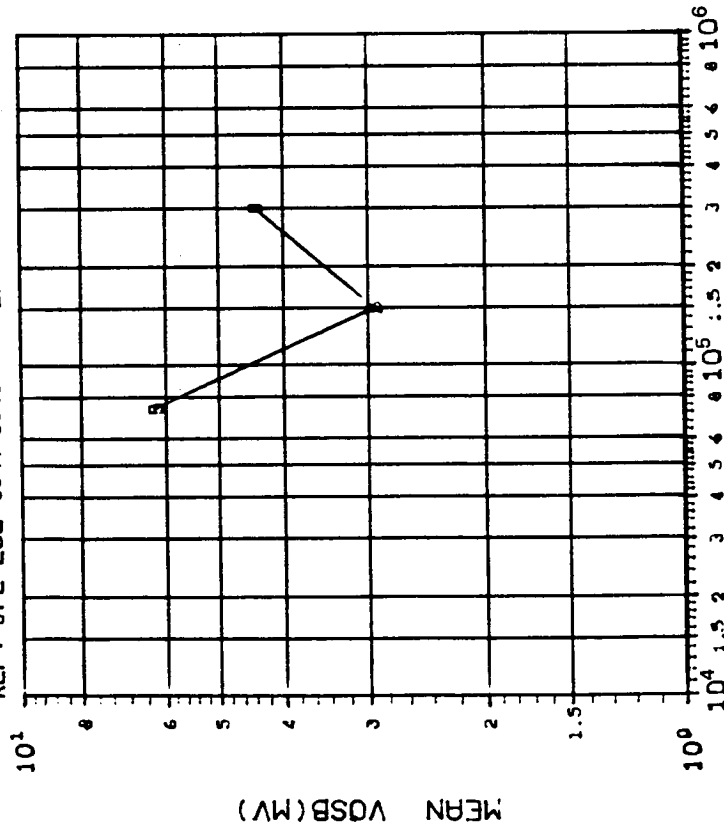
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600
	1000
	2000
.2154 .0858 .4013	

INITIAL MEAN VALUE VOSR(MV) = 3.22×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(2)VOSB (V0=0) IN MV: VS DOSE

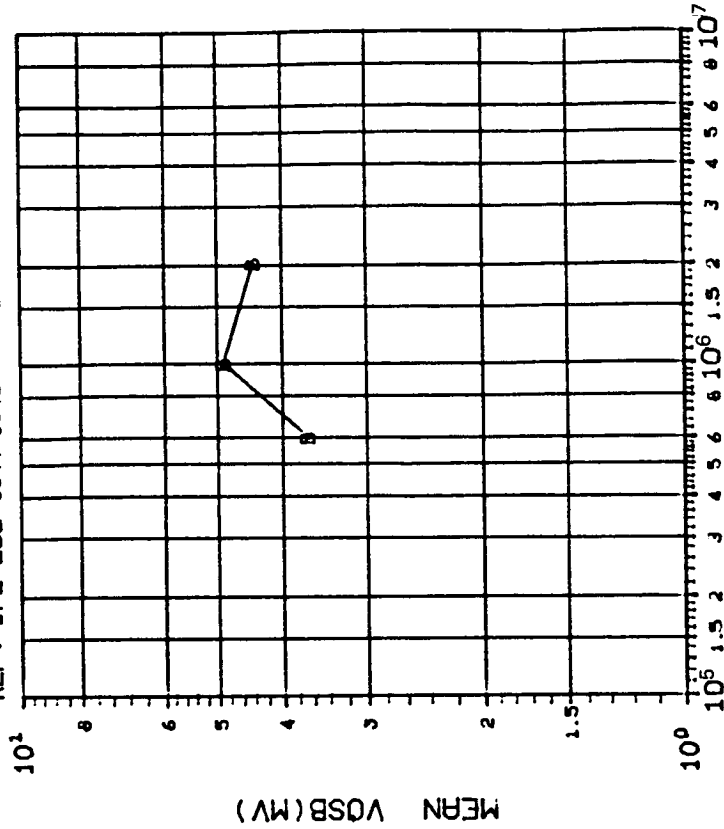
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
B	15.63	1.670 2.596

INITIAL MEAN VALUE VOSB(MV) = 6.67×10^{-3}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(2)VOSB (V0=0) IN MV: VS DOSE

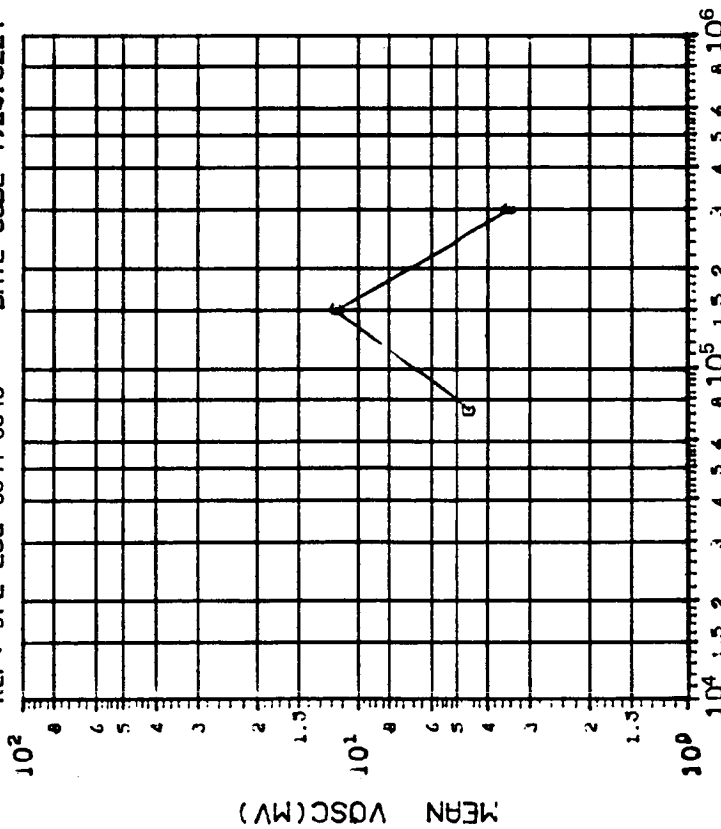
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000 2000
B	2.747	2.554 1.550

INITIAL MEAN VALUE VOSB(MV) = 6.67×10^{-3}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PM1 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co ⁶⁰ Gammas

(31)VOSC (V0=0) IN MV: VS DOSE

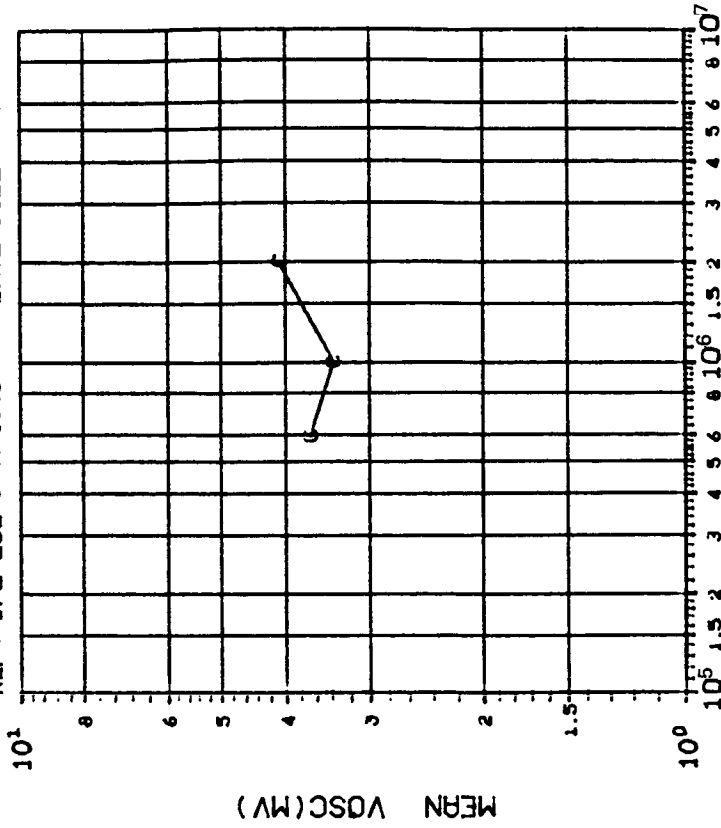
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
	300	
C	9.323	23.40
	3.394	

INITIAL MEAN VALUE VOSC(MV) = 9.70X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PM1 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co ⁶⁰ Gammas

(31)VOSC (V0=0) IN MV: VS DOSE

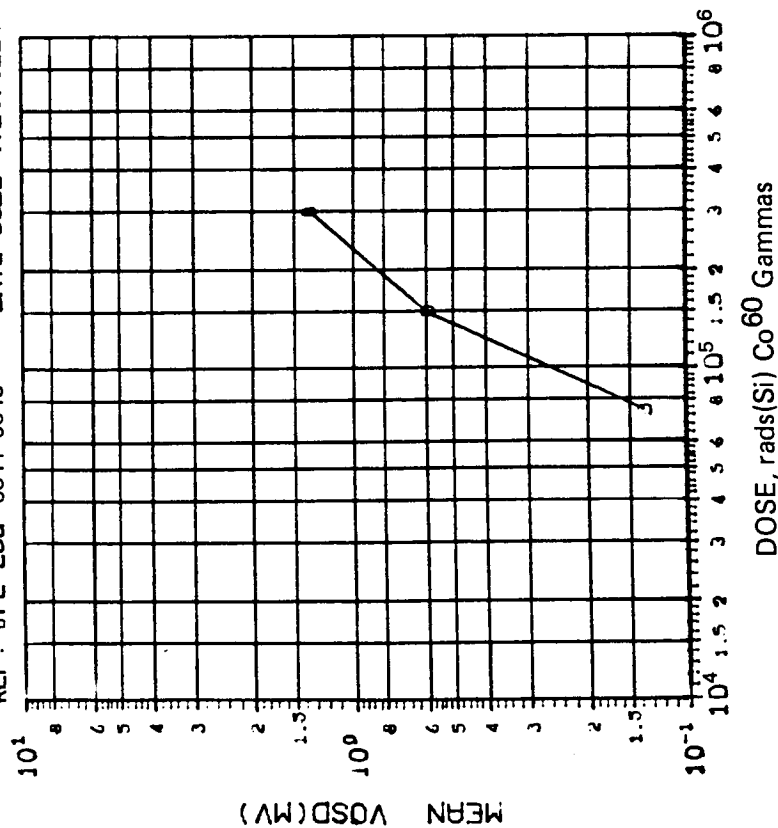
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000
	2000	
C	3.302	1.941
	1.945	

INITIAL MEAN VALUE VOSC(MV) = 9.70X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rad(Si) Co⁶⁰ Gammas

(4)1VOSD (V0=0) IN MV: VS DOSE

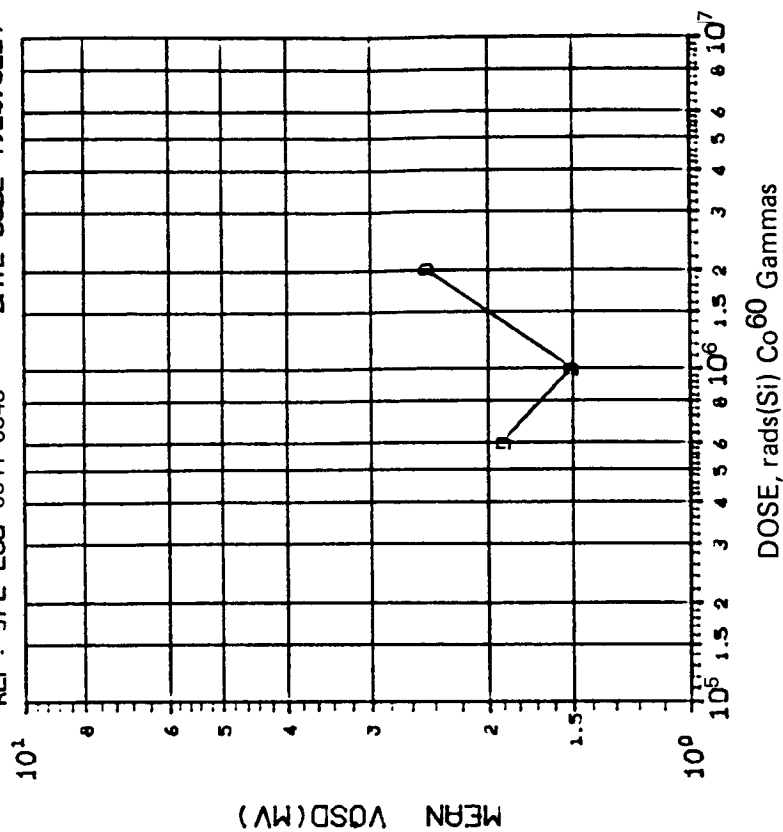
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	75
	150
	300
1.761 3.642 3.662	

INITIAL MEAN VALUE VOSD(MV) = 1.97×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rad(Si) Co⁶⁰ Gammas

(4)3VOSD (V0=0) IN MV: VS DOSE

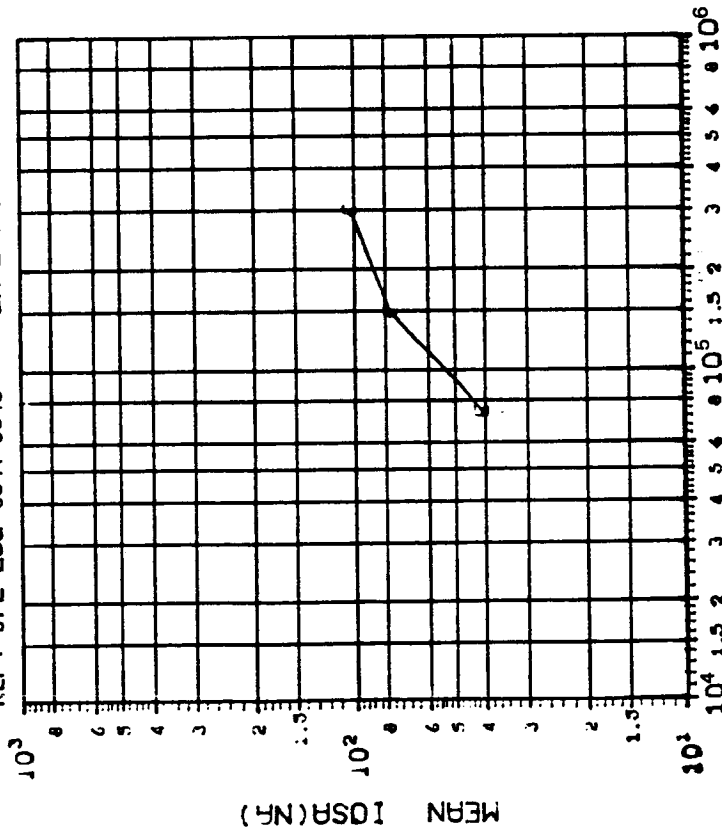
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	600
	1000
	2000
3.780 1.627 1.504	

INITIAL MEAN VALUE VOSD(MV) = 1.97×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PM1 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rad(Si) Co⁶⁰ Gammas

(5110SA (VO=0) IN NA: VS DOSE

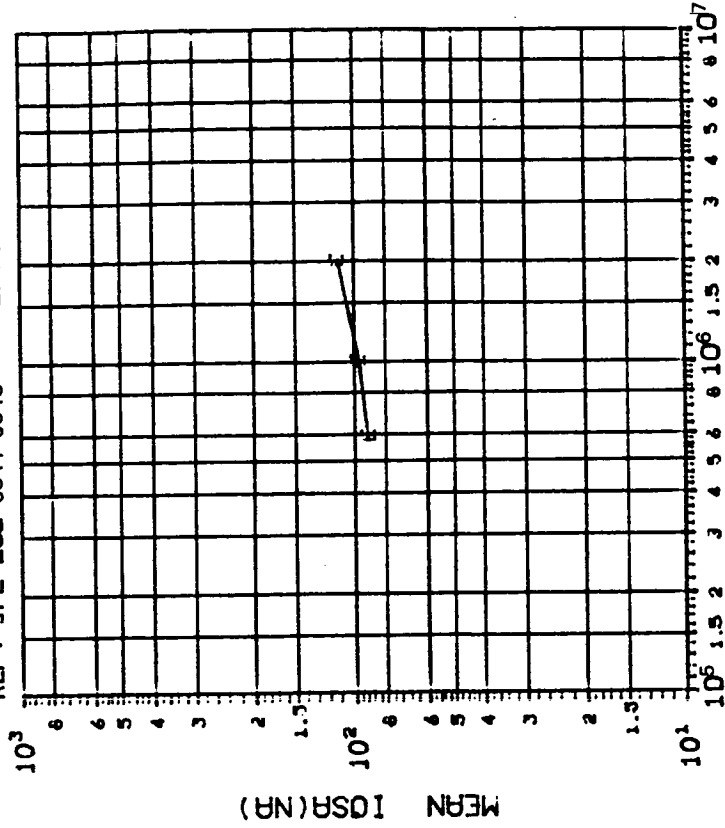
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	75 150 300
	36.97 39.11 62.26

INITIAL MEAN VALUE IOSR(NA) = 7.26×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PM1 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rad(Si) Co⁶⁰ Gammas

(5110SA (VO=0) IN NA: VS DOSE

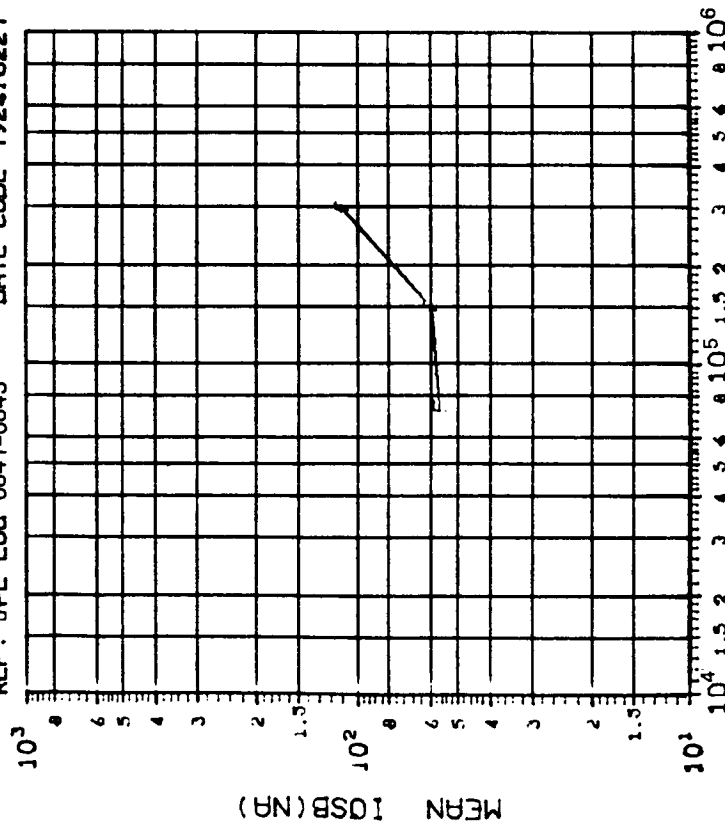
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	600 1000 2000
	58.52 52.62 41.22

INITIAL MEAN VALUE IOSR(NA) = 7.26×10^{-1}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(6110SB (V0=01) IN NA: VS DOSE

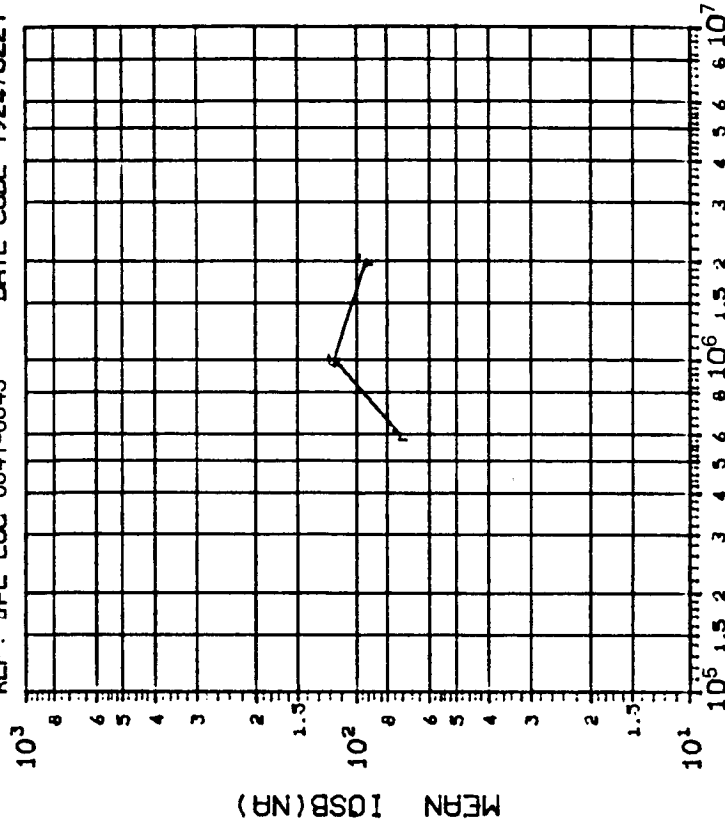
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	178.7 41.32 72.62

INITIAL MEAN VALUE IOSB(NA) = 1.16X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0843 DATE CODE 7924/8227



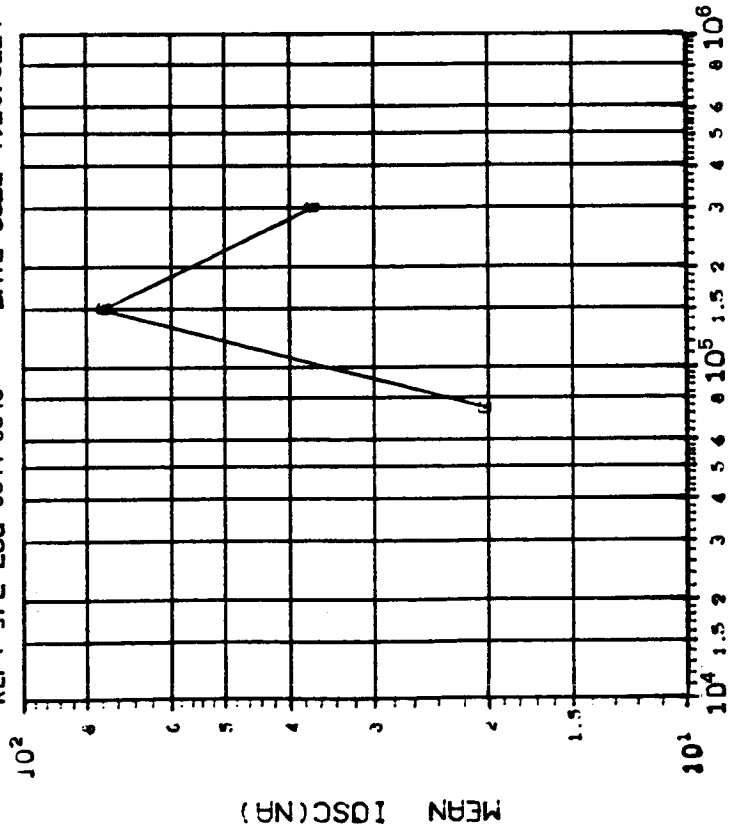
DOSE, rads(Si) Co 60 Gammas

(6110SB (V0=01) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	59.14 81.91 41.36

INITIAL MEAN VALUE IOSB(NA) = 1.16X10⁻⁹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMJ 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



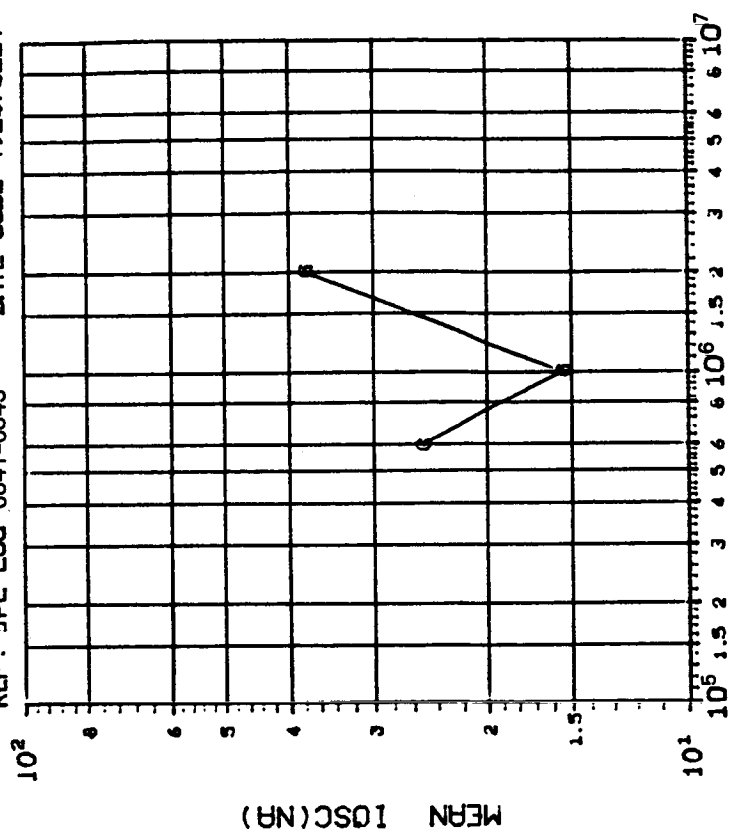
DOSE, rads(Si) Co 60 Gammas

(7)IOSC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	75
	150
	300
G	94.75 152.7 100.3

INITIAL MEAN VALUE IOSC(NA) = 5.36X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMJ 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



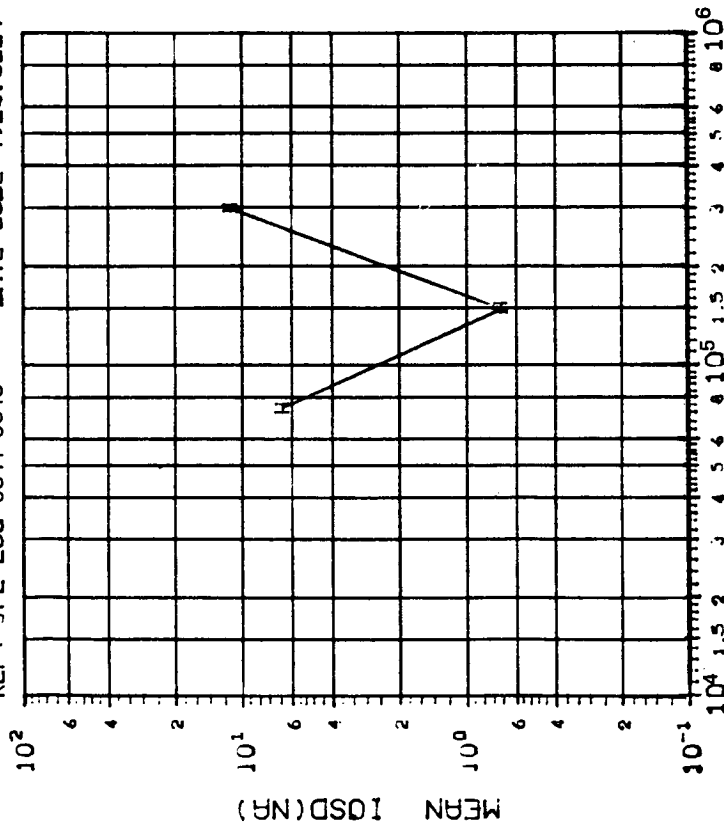
DOSE, rads(Si) Co 60 Gammas

(7)IOSC (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
G	600
	1000
	2000
G	89.26 53.67 52.79

INITIAL MEAN VALUE IOSC(NA) = 5.36X10⁻¹

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227

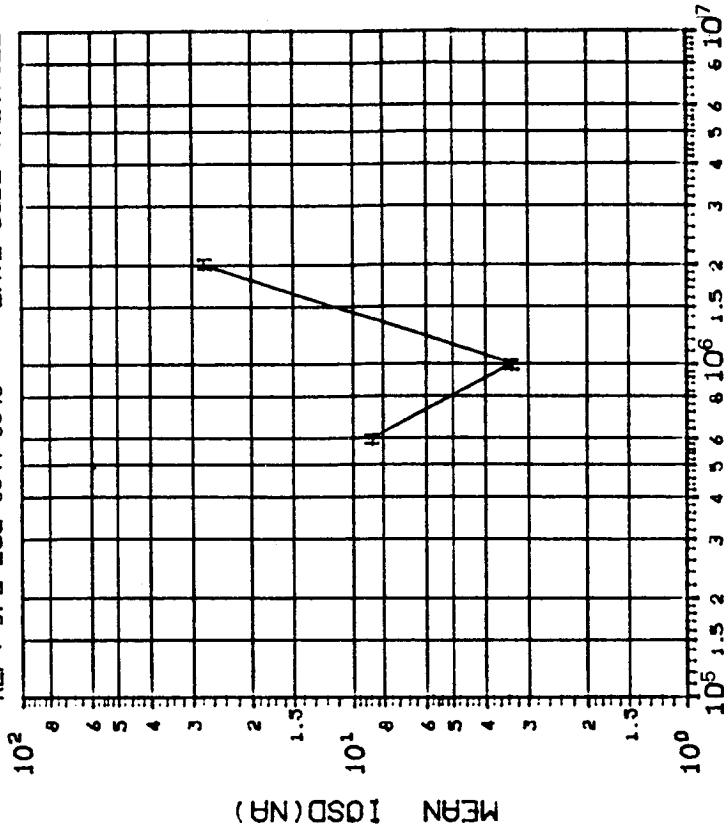


DOSE, rads(Si) Co 60 Gammas
 (8)IOSD (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	75 150 300
	31.52 101.7 108.7

INITIAL MEAN VALUE IOSD(NA) = 1.18×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0843 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas
 (8)IOSD (V0=0) IN NA: VS DOSE

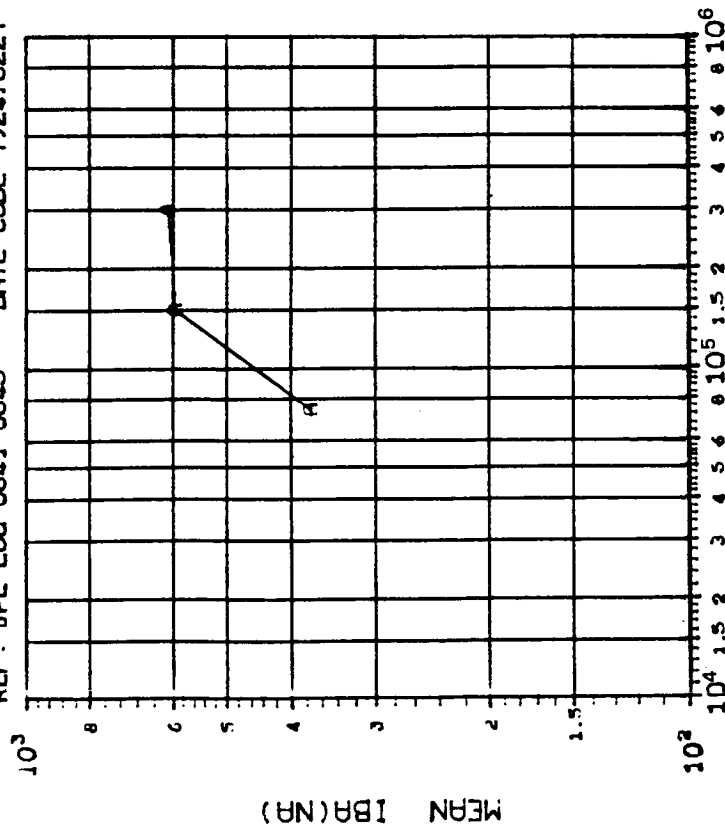
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	600 1000 2000
	105.5 50.23 45.64

INITIAL MEAN VALUE IOSD(NA) = 1.18×10^{-9}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMJ 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

(1) IBA (VO=0) IN NA: VS DOSE

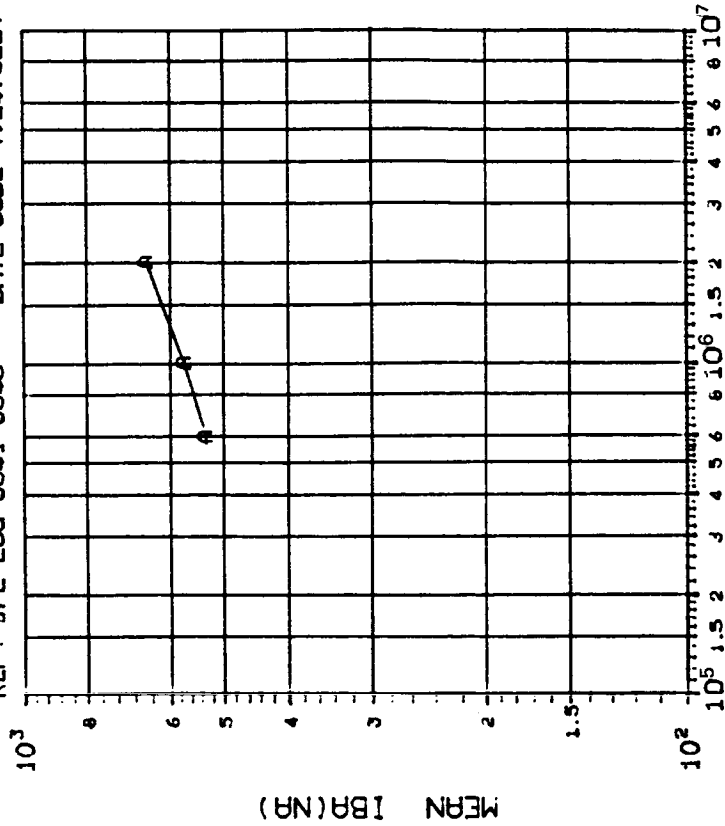
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75
	150
	300
186.3 192.3 276.9	

INITIAL MEAN VALUE IBA(NA) = $2.89 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMJ 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

(1) IBA (VO=0) IN NA: VS DOSE

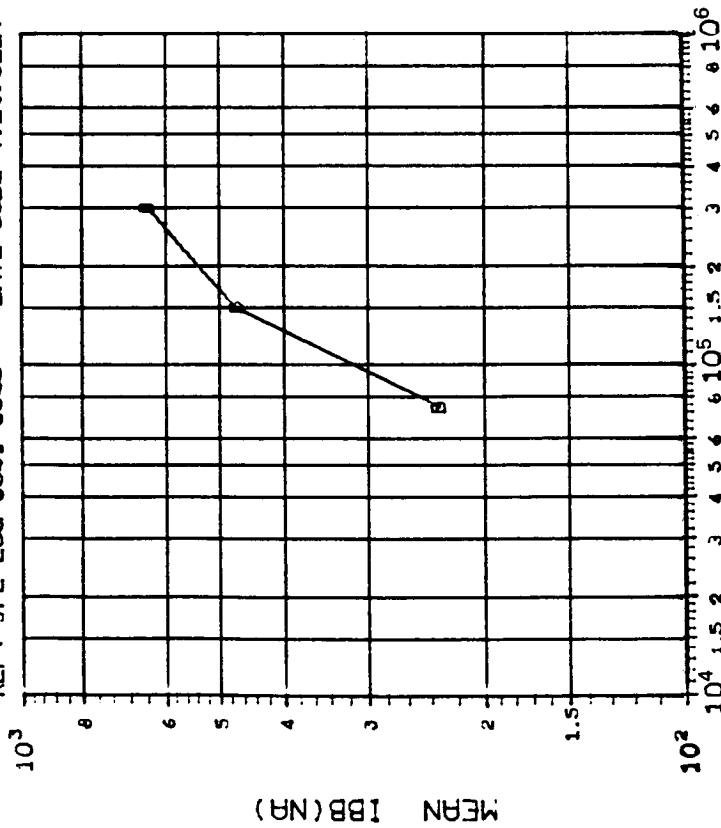
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600
	1000
	2000
204.0 184.3 154.6	

INITIAL MEAN VALUE IBA(NA) = $2.89 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

(2)IBB (V0=0) IN NA: VS DOSE

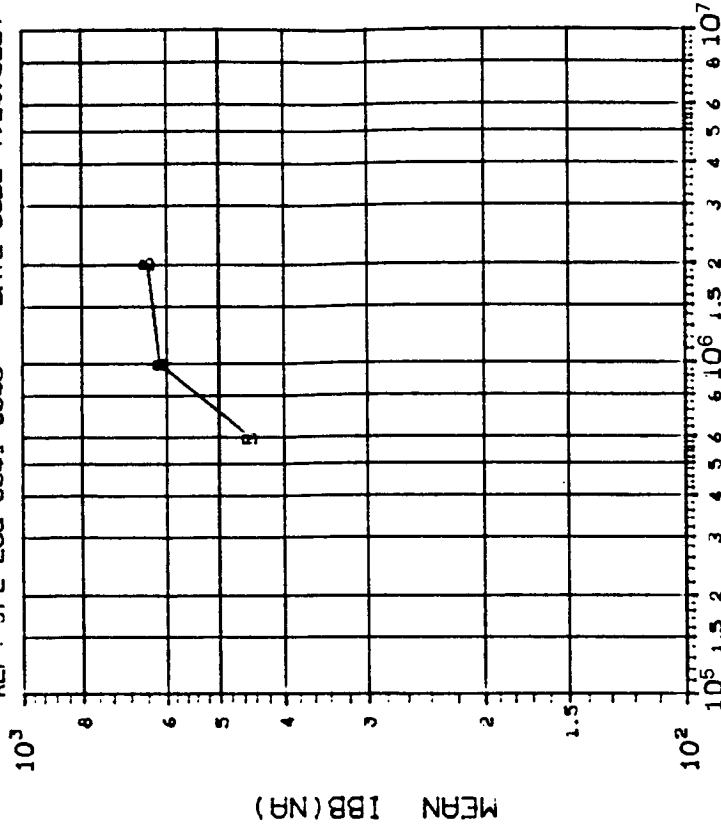
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
166.5 244.3 341.8	

INITIAL MEAN VALUE IBB(NA) = $2.70 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



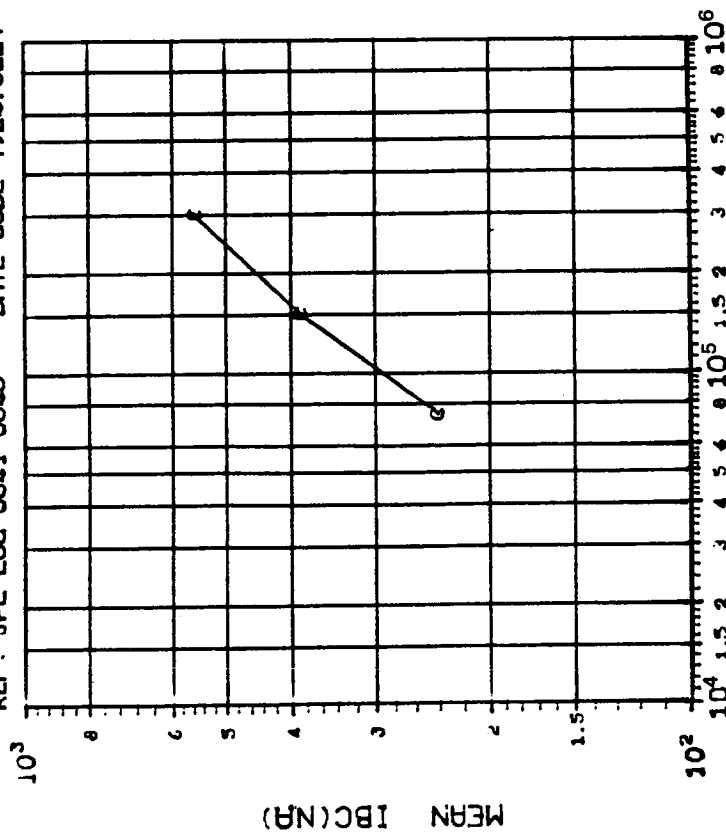
DOSE, rads(Si) Co⁶⁰ Gammas

(2)IBB (V0=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600
	1000
	2000
204.9 292.4 203.4	

INITIAL MEAN VALUE IBB(NA) = $2.75 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0845 DATE CODE 7924/8227

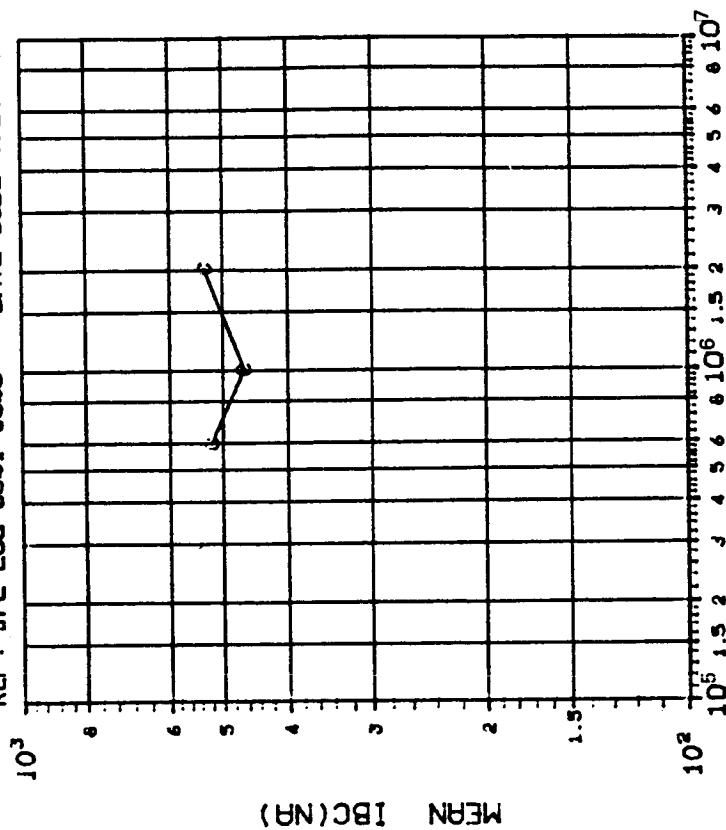


DOSE, rads(Si) Co 60 Gammas
 (3)IBC (VO=0) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
C	97.97 391.1 294.1

INITIAL MEAN VALUE IBC(NA) = $2.67 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR
 MFG: PMI 9 DEVICES TEST DATE 02-09-83
 REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas
 (3)IBC (VO=0) IN NA: VS DOSE

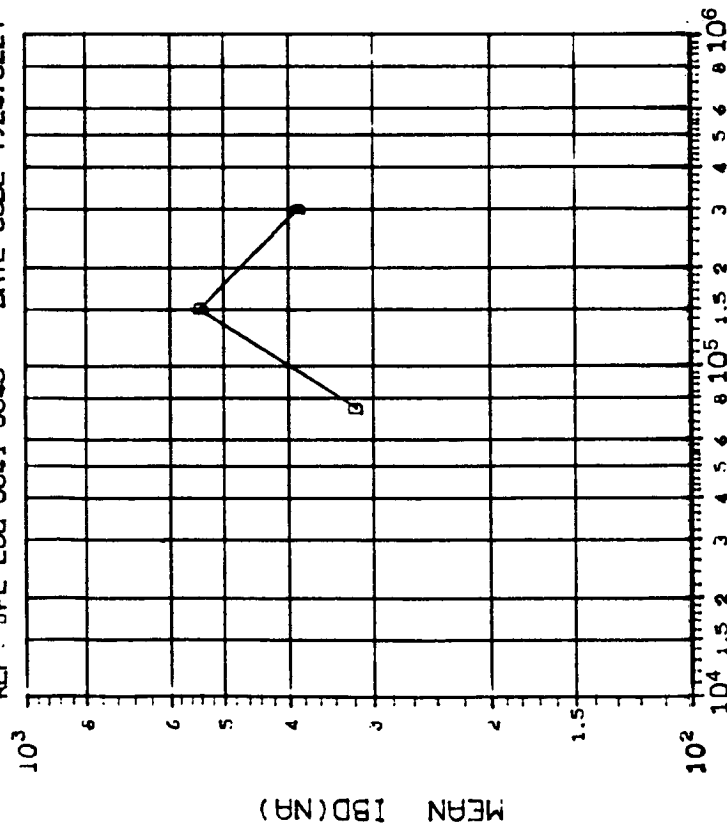
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
C	257.9 191.3 171.3

INITIAL MEAN VALUE IBC(NA) = $2.67 \times 10^{+1}$

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

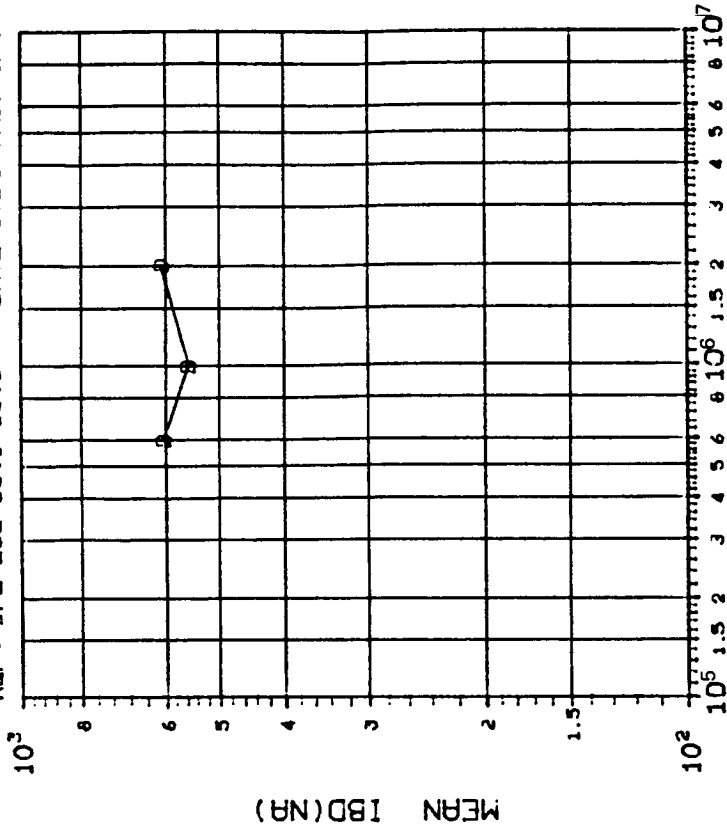
REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

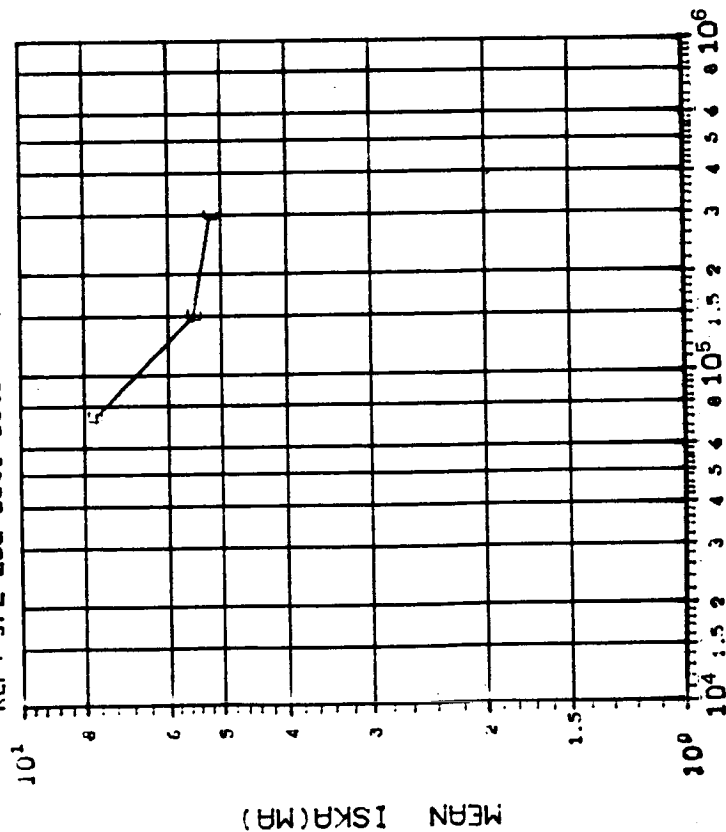
REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(511SKA (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

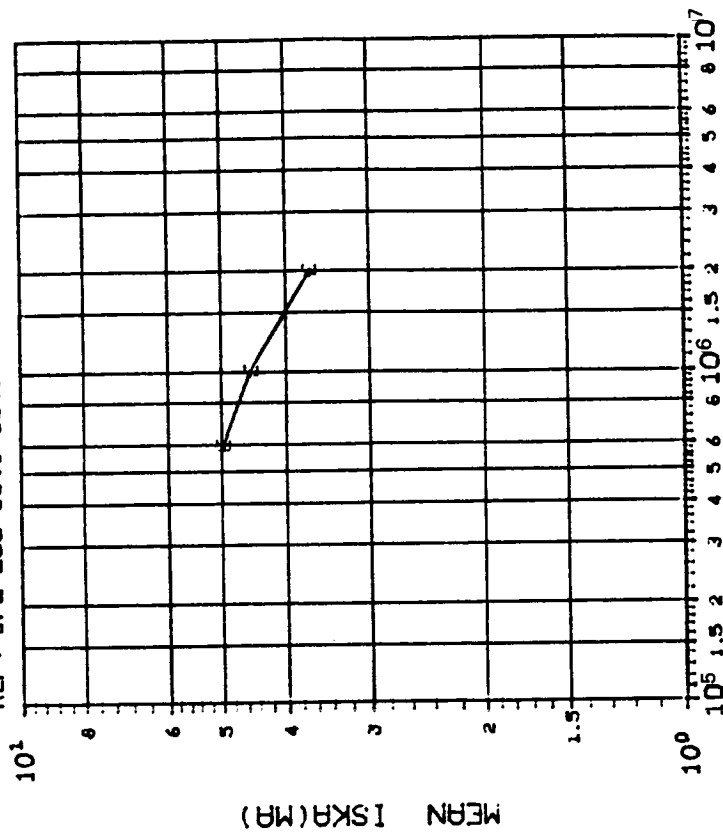
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75 150 300	
E	1.948 .6426 .6379	

INITIAL MEAN VALUE ISKA(MA) = 1.24X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(511SKA (V0=-V+1.5V, V1N=-100MV) IN VS DOSE

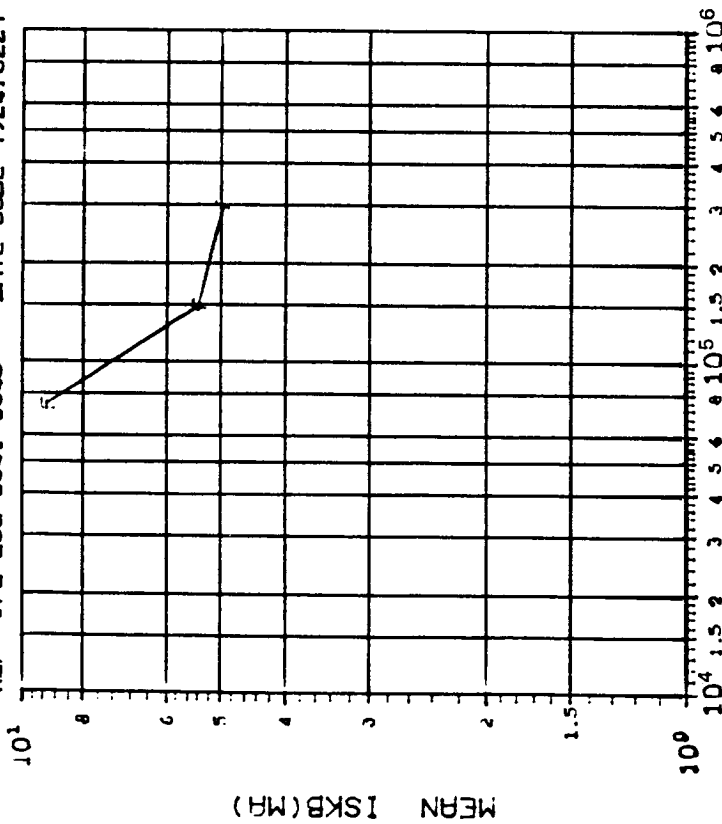
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600 1000 2000	
E	.5442 .5639 .6046	

INITIAL MEAN VALUE ISKA(MA) = 1.24X10⁴

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

(6) ISKB (V₀=-V+1.5V, V_{IN}=-100mV) IN VS DOSE

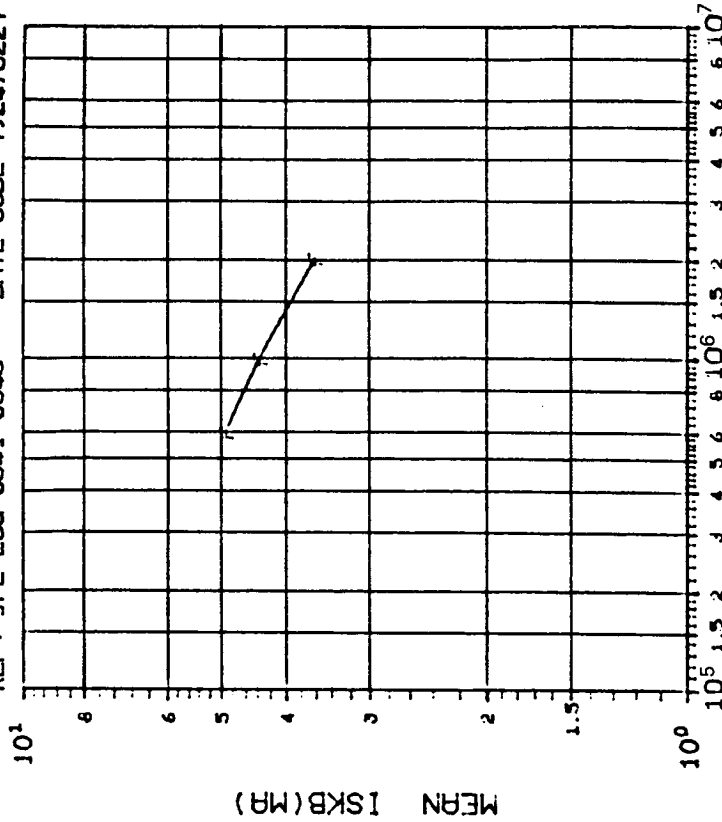
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	75 150 300
	4.777 .6582 .7520

INITIAL MEAN VALUE ISKB(MA) = 1.21X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co⁶⁰ Gammas

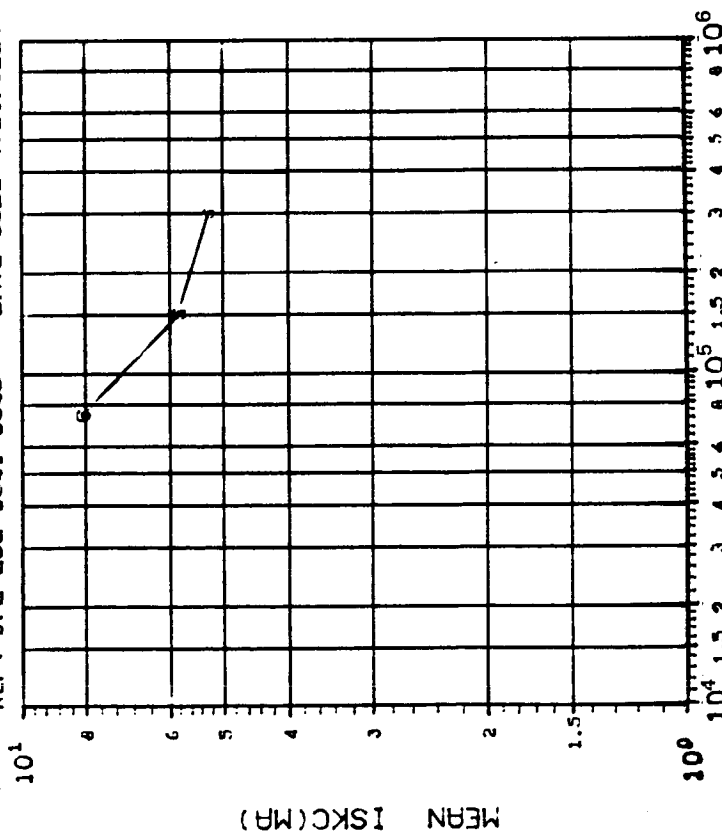
(6) ISKB (V₀=-V+1.5V, V_{IN}=-100mV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	600 1000 2000
	.4266 .4270 .3979

INITIAL MEAN VALUE ISKB(MA) = 1.21X10⁻¹¹

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83
REF: JPL LOG 0843-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

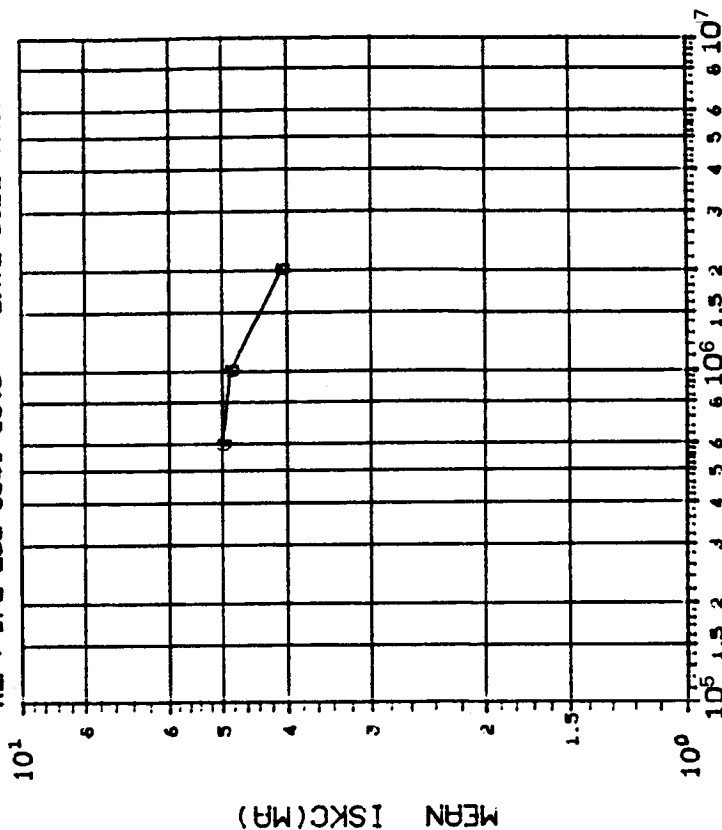
(711SKC (V0E-V+1.5V,VIN=100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
G	75	150 300
	2.864	.6624 .6209

INITIAL MEAN VALUE ISKC(MA) = 1.19×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMI 9 DEVICES TEST DATE 02-09-83
REF: JPL LOG 0843-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(711SKC (V0E-V+1.5V,VIN=100MV) IN VS DOSE

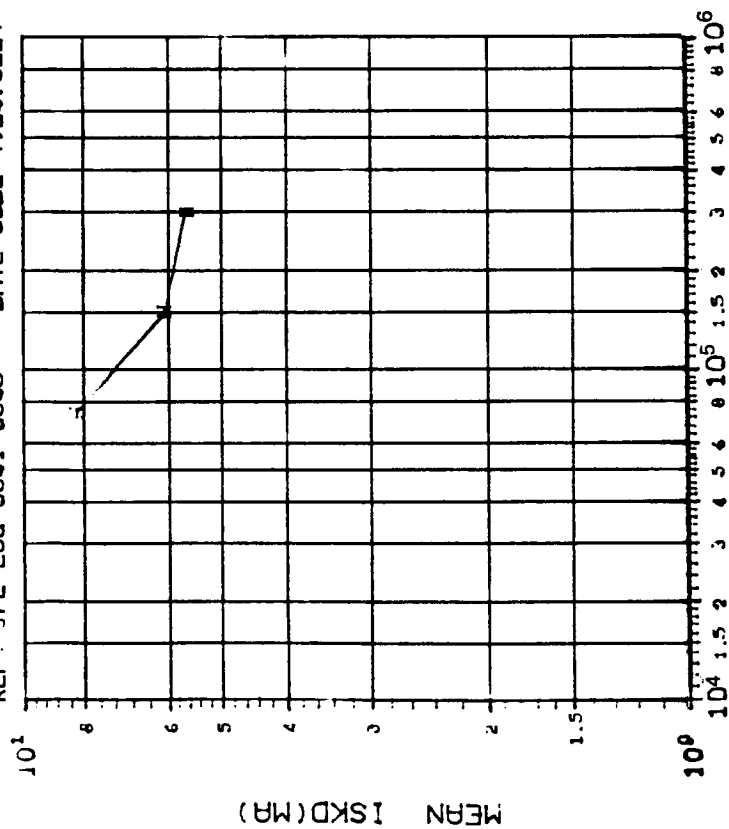
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
G	600	1000 2000
	.7478	.5736 .5625

INITIAL MEAN VALUE ISKC(MA) = 1.19×10^{11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMJ 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



DOSE, rads(Si) Co 60 Gammas

(81)ISKD (V0E--V+1.5V, VIN--100MV) IN VS DOSE

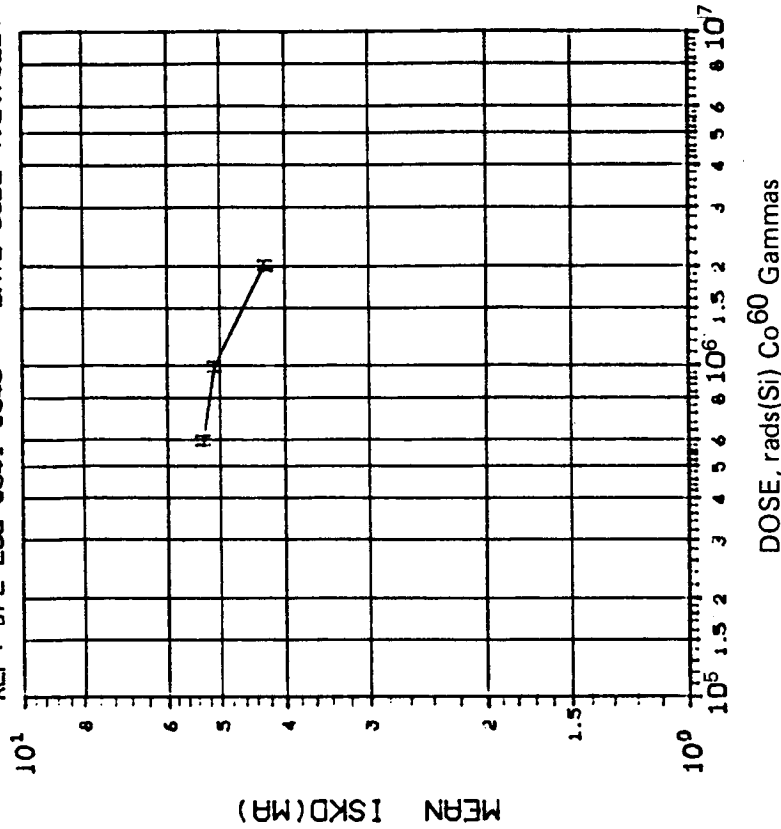
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
H	1.677	.6298
	300	.8281

INITIAL MEAN VALUE ISKD(MA) = 1.18×10^{-11}

DEVICE TYPE: LM139 QUAD COMPARATOR

MFG: PMJ 9 DEVICES TEST DATE 02-09-83

REF: JPL LOG 0841-0845 DATE CODE 7924/8227



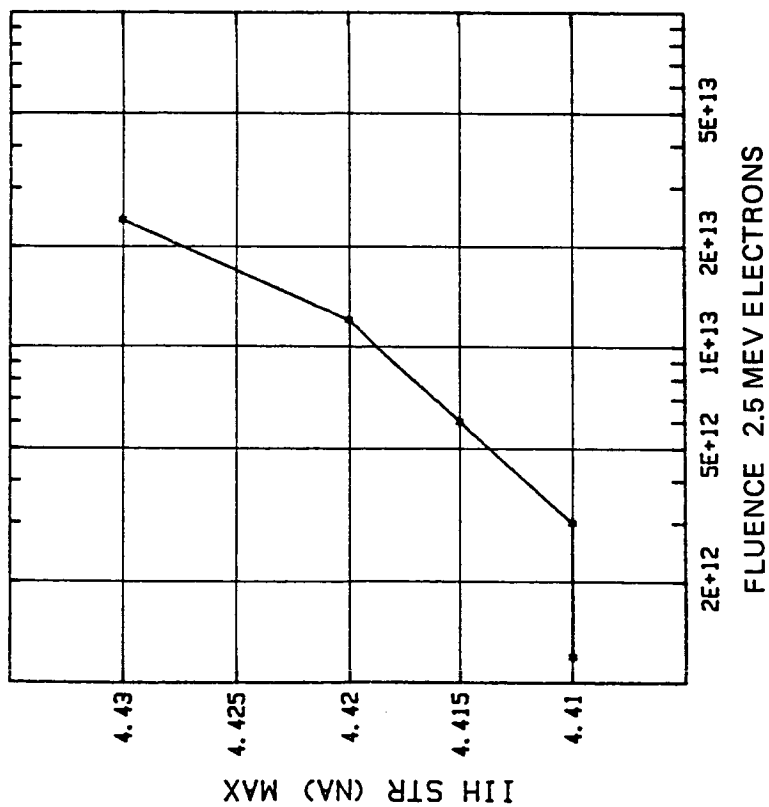
DOSE, rads(Si) Co 60 Gammas

(81)ISKD (V0E--V+1.5V, VIN--100MV) IN VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000
H	.7887	.7089
	2000	.6654

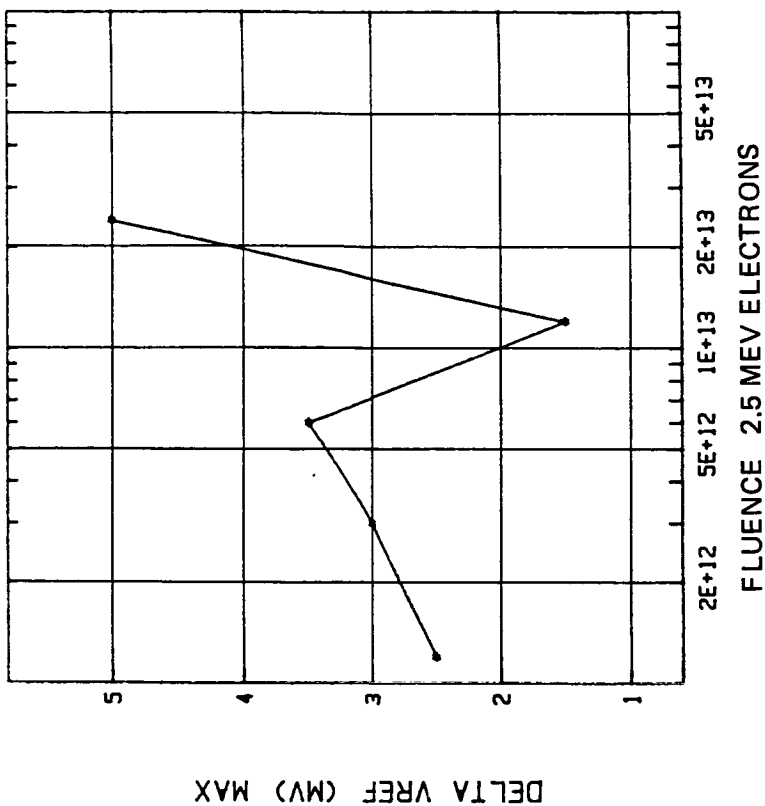
INITIAL MEAN VALUE ISKD(MA) = 1.18×10^{-11}

DEVICE TYPE: MN5211 HYB.12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



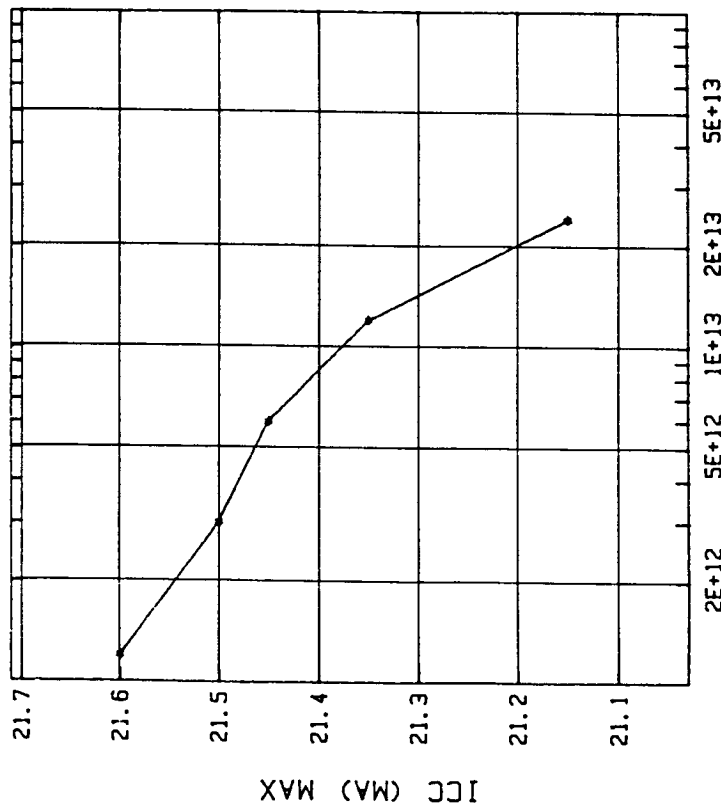
(1) I1H STR (NA) MAX VS. DOSE
 INITIAL MEAN VALUE I1H STR (NA) MAX = 4.4

DEVICE TYPE: MN5211 HYB.12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



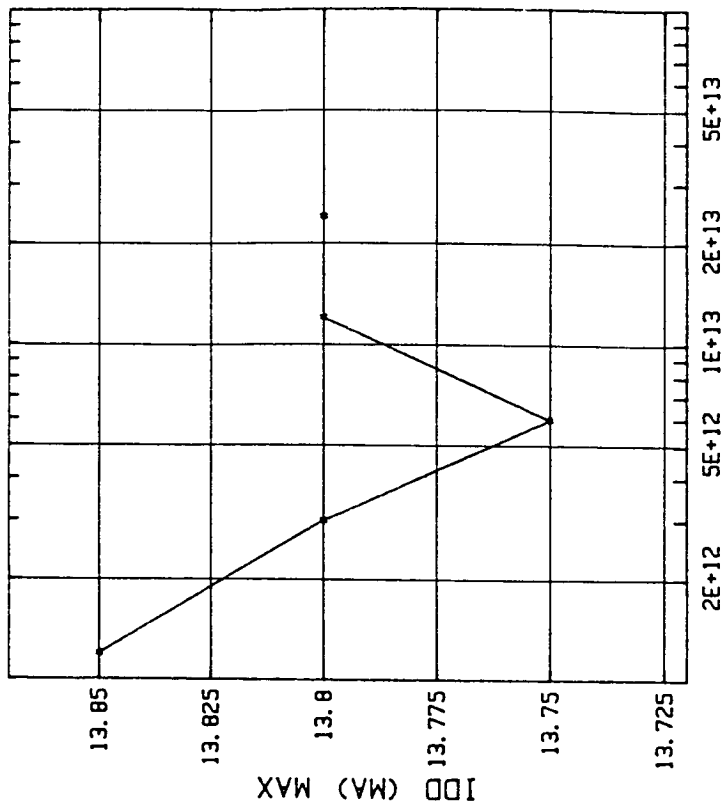
(2) DELTA VREF (MV) MAX VS. DOSE
 INITIAL MEAN VALUE DELTA VREF (MV) MAX = 0

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



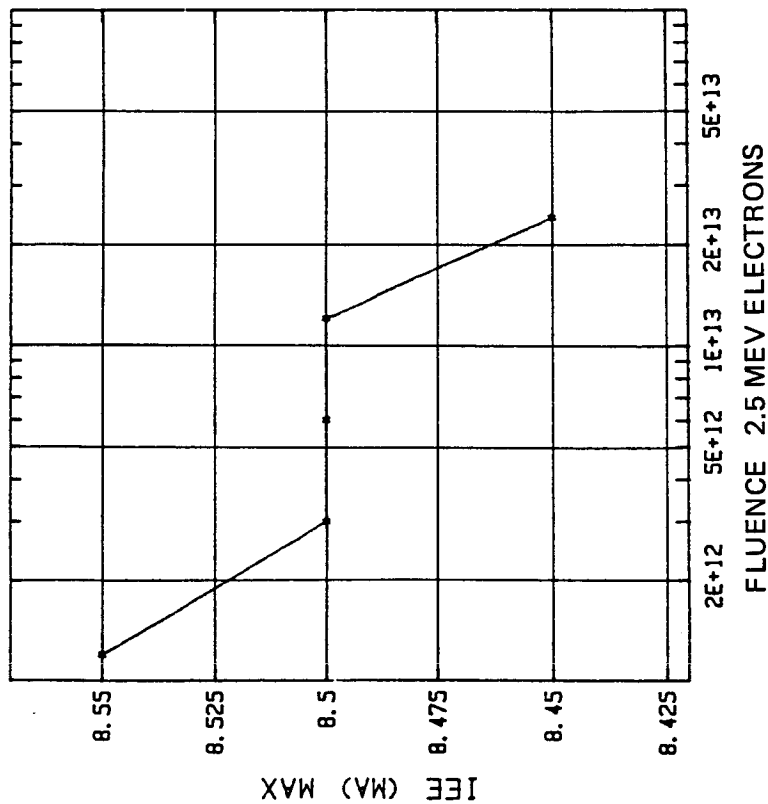
(3) ICC (MA) MAX VS. DOSE
 INITIAL MEAN VALUE ICC (MA) MAX = 21.95

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



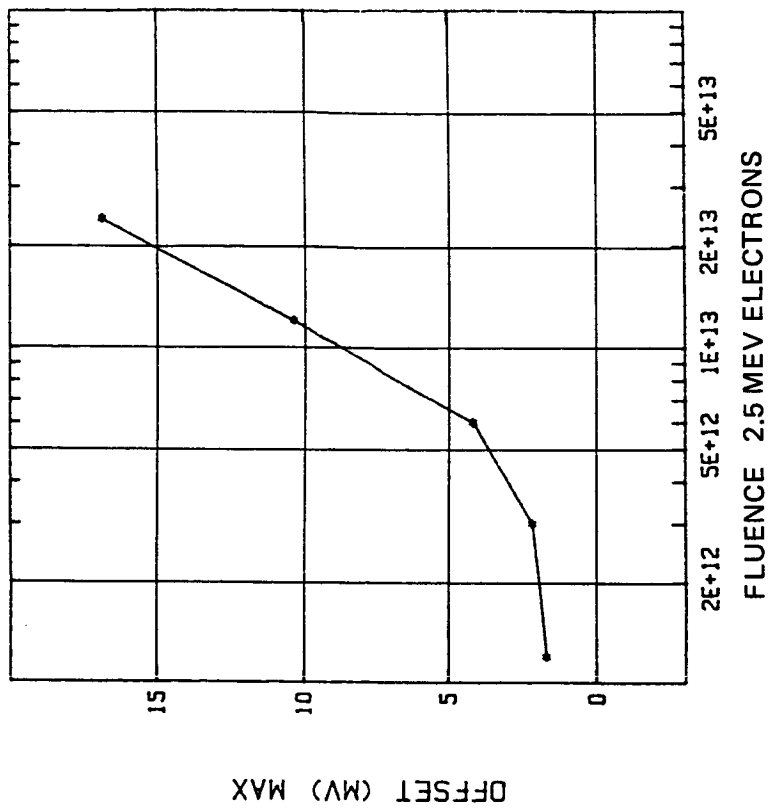
(4) IDD (MA) MAX VS. DOSE
 INITIAL MEAN VALUE IDD (MA) MAX = 13.95

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



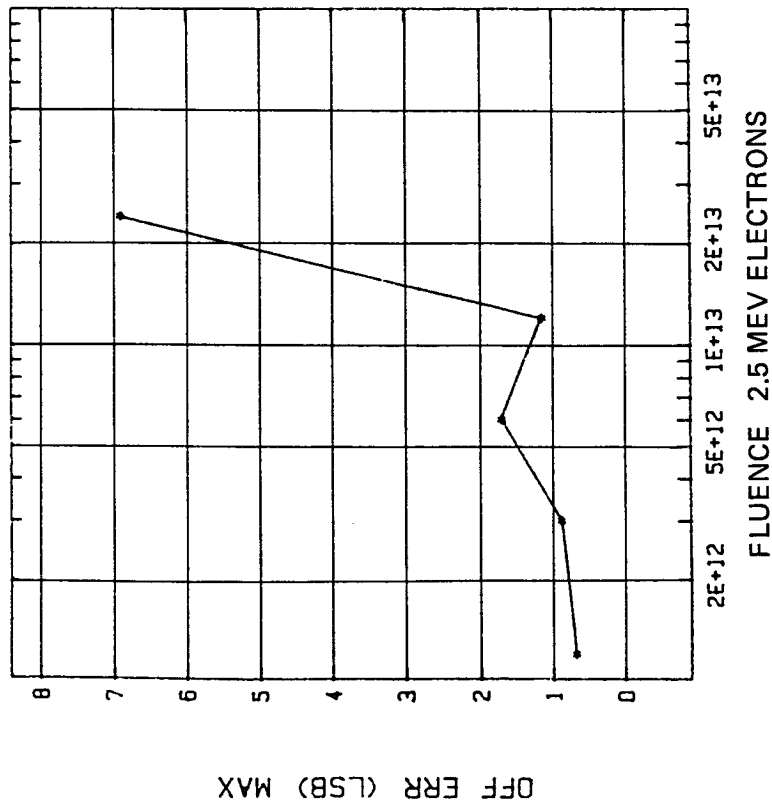
(5) IEE (mA) MAX VS. DOSE
 INITIAL MEAN VALUE IEE (mA) MAX = 8.6

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



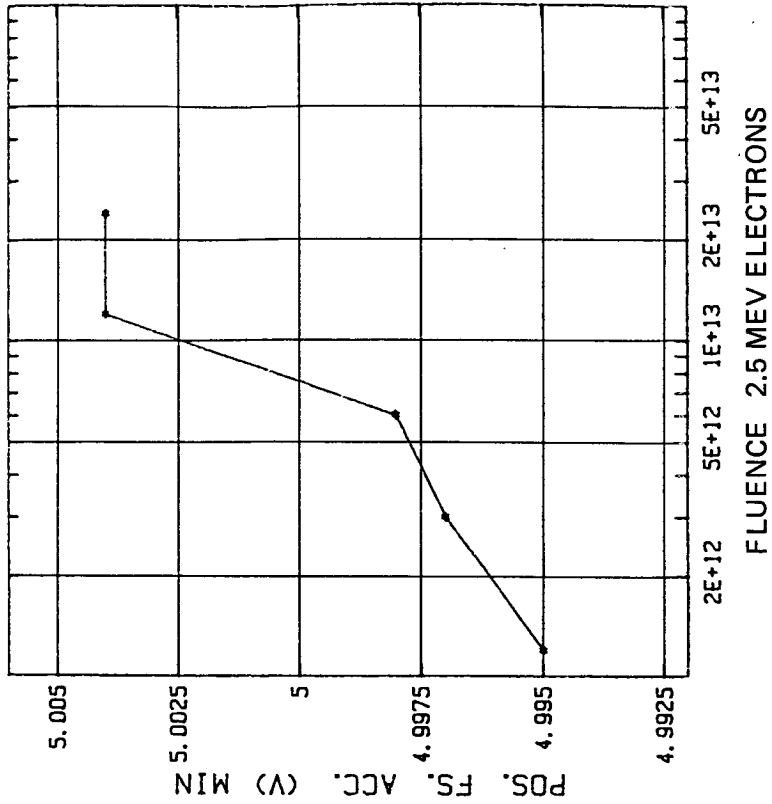
(6) OFFSET (mV) MAX VS. DOSE
 INITIAL MEAN VALUE OFFSET (mV) MAX = 2.013

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



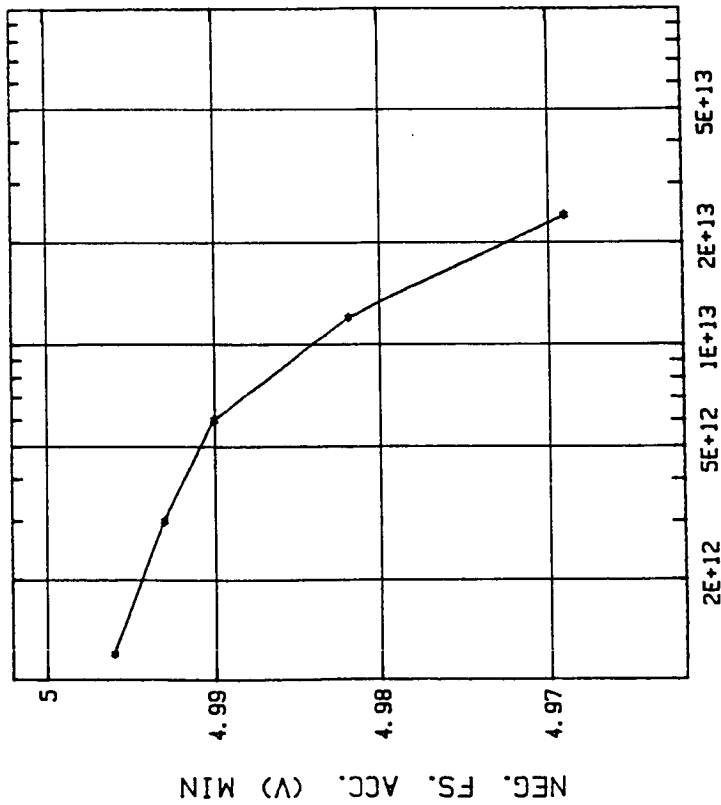
(7) OFF ERR (LSB) MAX VS. DOSE
 INITIAL MEAN VALUE OFF ERR (LSB) MAX = .8244

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



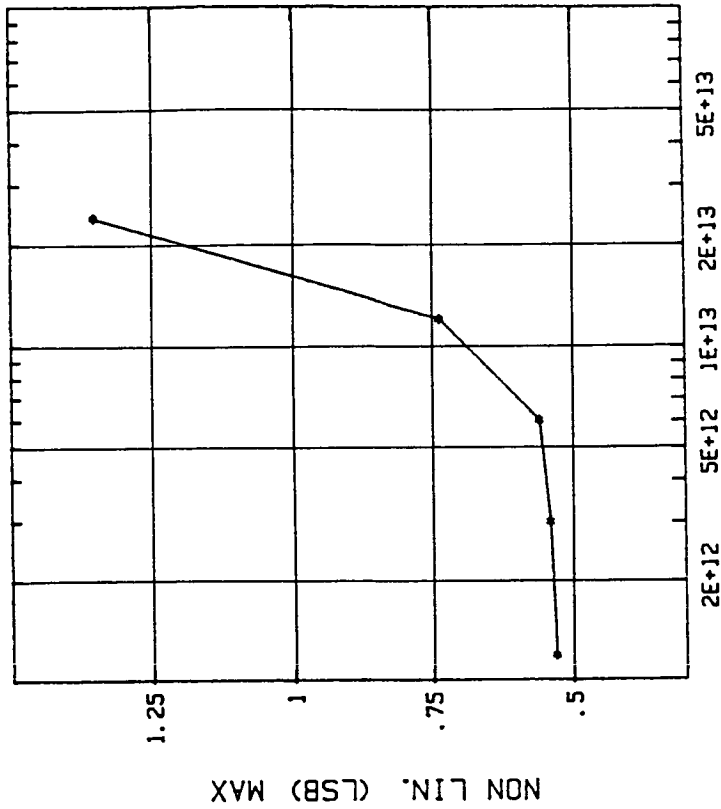
(8) POS. FS. ACC. (V) MIN VS. DOSE
 INITIAL MEAN VALUE POS. FS. ACC. (V) MIN = 4.994

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



(9) NEG. FS. ACC. (V) MIN VS. DOSE
 INITIAL MEAN VALUE NEG. FS. ACC. (V) MIN = 4.997

DEVICE TYPE: MN5211 HYB. 12 BIT A/D CONVERTER
 MFG: MNC 3 DEVICE(S) TEST DATE: 5/21/81
 REF: JPL LOG 0729 DATE CODE: -



(10) NON LIN. (LSB) MAX VS. DOSE
 INITIAL MEAN VALUE NON LIN. (LSB) MAX = .501

DEVICE TYPE: MN5211 12 Bit A/D Converter

TEST DATE: 5-21-81

MFG: MNC 2 Devices

DATE CODE: 8102

REF: JPL LOG 0729

SOURCE: Dynamitron, 2.5 MeV e⁻

WORST CASE VALUES (AVG)

Dose, krad(Si)	V _{OH} (Volts) min	V _{OH} EOC (Volts) min	V _{OL} (mV) max	V _{OL} EOC (mV) max	I _{OH} (mA) min	I _{OH} EOC (mA) min	I _{OL} (mA) max
Initial	4.400	4.205	99.00	84.50	5.057	2.010	18.56
30	4.410	4.220	101.00	87.00	4.970	2.010	17.20
75	4.410	4.230	101.00	86.00	4.950	2.010	16.17
150	4.415	4.230	102.00	87.50	4.924	2.005	15.27
300	4.420	4.235	102.5	88.00	4.900	1.996	14.34
600	4.430	4.240	103.0	88.50	4.877	1.970	13.35

Dose, krad(Si)	I _{OL} EOC (mV) min	I _{IH} STR (nA) min	I _{IH} CLK (nA) max	I _{IL} STR (μA) max	I _{IL} CLK (μA) min	ΔV _{REF} (mV) min	I _{CC} (mA) max
Initial	19.45	612.3	795.1	331.0	332.7	--	21.95
30	17.60	646.0	828.5	324.8	324.0	2.500	21.60
75	16.15	624.8	804.3	322.6	322.3	3.000	21.50
150	15.00	615.0	793.5	321.7	320.9	3.500	21.45
300	13.89	602.0	778.8	320.0	320.0	1.500	21.35
600	12.85	609.3	765.6	318.0	319.0	5.000	21.15

DEVICE TYPE: MN5211 12 Bit A/D Converter

TEST DATE: 5-21-81

MFG: MNC 2 Devices

DATE CODE: 8102

REF: JPL LOG 0729

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

Dose, krad(Si)	I _{DD} (mA) max	I _{EE} (mA) max	OFF SET (mV) max	OFF ERR (LSR) max	POS FS ACC (Volts) min	NEG FS ACC (Volts) min	NONLIN (LSB) max
Initial	13.95	8.600	2.013	.8244	4.994	4.997	.5010
30	13.85	8.550	1.688	.6913	4.995	4.996	.5326
75	13.80	8.500	2.167	.8877	4.997	4.993	.5420
150	13.75	8.500	4.174	1.710	4.998	4.990	.5604
300	13.80	8.500	10.36	1.152	5.004	4.982	.7366
600	13.80	8.450	16.86	6.906	5.004	4.969	1.352

Dose, krad(Si)	V _{OH} (Volts) min	V _{OL} (mV) max	I _{OH} (mA) min	I _{OL} (mA) min
Initial	4.025	109.5	4.806	17.69
30	4.035	112.8	4.723	15.89
75	4.035	113.3	4.703	14.42
150	4.080	114.3	4.680	13.27
300	4.037	115.1	4.659	12.17
600	4.044	116.1	4.638	11.15

DEVICE TYPE: MN5214 12 Bit A/D Converter

TEST DATE: 5-21-81

MFG: MNC 2 Devices

DATE CODE: 8102

REF: JPL LOG 0730

SOURCE: Dynamitron, 2.5 MeV e⁻

WORST CASE VALUES (AVG)

Dose, krad(Si)	V _{OH} (Volts) min	V _{OH} EOC (Volts) min	V _{OL} (mV) max	V _{OL} EOC (mV) max	I _{OH} (mA) min	I _{OH} EOC (mA) min	I _{OL} (mA) max
Initial	4.140	4.390	103.5	86.5	4.765	4.805	17.90
30	Fail	Fail	Fail	Fail	Fail	Fail	Fail
75	Fail	Fail	Fail	Fail	Fail	Fail	Fail

Dose, krad(Si)	I _{OL} EOC (mV) min	I _{IH} STR (nA) max	I _{IH} CLK (nA) max	I _{IIL} STR (μA) max	I _{IIL} CLK (μA) max	ΔV REF (mA) max	I _{CC} (mA) max
Initial	20.17	668.0	898.3	298.0	304.4	--	20.45
30	Fail	Fail	Fail	Fail	Fail	Fail	Fail
75	Fail	Fail	Fail	Fail	Fail	Fail	Fail

Dose, krad(Si)	I _{DD} (mA) max	I _{EE} (mA) max	OFF SET (mV) max	OFF ERR (LSB) max	POS FS ACC (Volts) min	NEG FS ACC (Volts) min	NONLIN (LSB) max
Initial	17.95	4.250	1.991	.8154	4.996	4.999	.443
30	Fail	Fail	Fail	Fail	Fail	Fail	Fail
75	Fail	Fail	Fail	Fail	Fail	Fail	Fail

Dose, krad(Si)	V _{OH} (Volts) min	V _{OL} (mV) max	I _{OH} (mA) min	I _{OL} (mA) min
Initial	4.055	117.3	4.592	18.17
30	Fail	Fail	Fail	Fail
75	Fail	Fail	Fail	Fail

DEVICE TYPE: MN5214 Hyb. 12 Bit A/D Converter TEST DATE: 5-5-85
MFG: MNC 2 Devices DATE CODE: 8141
REF: JPL LOG 0814 SOURCE: Dynamitron, 2.5 MeV e⁻

Two samples of the Micro Networks MN5214/90228A (50-chip hybrid) date code 8141, were radiation tested at BREL (Boeing Radiation Effects Lab) on 5 May 1982. The devices were log number 0814 and they were tested per RTR 329. The radiation levels were 30, 75, 150, 300, and 600 krad(Si).

The devices were Galileo flight parts that had been rebuilt by replacing the Raytheon RM1556 operational amplifier with a similar MC1556 Motorola operational amplifier.

Both devices failed to meet one or more of the linear specifications at 150 krad(Si). At 600 krad(Si) S/N 144 was still functional (but highly degraded) and S/N 148 had failed catastrophically.

It is recommended that these devices not be used in a radiation environment that exceeds 75 krad(Si).

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(1) V_{OL} mV (I_{OL} = 0.8 mA)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	160.5	162.0	162.0	162.5	163.0	163.0	164.0
1515	162.0	166.0	167.5	166.5	166.5	168.0	167.0
1516	163.0	163.5	163.5	165.0	165.5	165.5	165.5
1517	158.5	163.0	162.5	163.0	163.5	164.5	164.5
1518	154.0	156.0	157.5	158.5	158.5	158.0	158.0
Max.	163.0	166.0	167.5	166.5	166.5	168.0	167.0
Mean	159.6	162.1	162.6	163.1	163.4	163.8	163.8
Min.	154.0	156.0	157.5	158.5	158.5	158	158.0
MN+3 sigma	170.2	173.2	173.3	172.1	172.6	174.9	174.1
MN-3 sigma	148.9	150.9	151.8	154.0	154.1	152.6	153.4

(2) V_{OL} EOC mV (I_{OL} = 0.8 mA)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	185.5	183.5	183.0	184.0	184.5	185.5	185.5
1515	185.0	177.0	176.5	178.5	180.5	180.0	183.0
1516	187.0	184.5	187.5	186.5	186.5	189.0	189.5
1517	187.5	178.5	179.5	180.5	181.0	181.0	182.0
1518	187.0	182.0	180.0	179.0	180.5	184.0	185.0
Max.	187.5	184.5	187.5	186.5	186.5	189.0	189.5
Mean	186.4	181.1	181.3	181.7	182.6	183.9	185.0
Min.	185.0	177.0	176.5	178.5	180.5	180.0	182.0
MN+3 sigma	189.6	190.7	193.7	192.0	190.8	194.7	193.6
MN-3 sigma	183.1	171.4	168.8	171.3	174.3	173.0	176.3

(3) V_{OL} CLK mV (I_{OL} = 0.8 nA)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	197.5	195.5	194.0	194.5	193.5	195.0	194.0
1515	193.0	186.0	186.0	186.5	187.0	186.5	189.0
1516	195.5	193.0	195.5	194.5	195.0	195.5	195.0
1517	194.0	186.0	186.5	187.5	187.5	187.5	189.0
1518	191.0	187.5	186.5	184.5	187.5	187.5	187.5
Max.	197.5	195.5	195.5	194.5	195.0	195.5	195.0
Mean	194.2	189.6	189.7	189.5	190.1	190.4	190.9
Min.	191.0	186.0	186.0	184.5	187.0	186.5	187.5
MN+3 sigma	201.5	202.7	203.6	203.5	201.5	203.7	200.9
MN-3 sigma	186.8	176.4	175.7	175.4	178.6	177.0	180.8

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(4) I_{OL} mA (V_{OL} = 0.4 V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	13.20	12.90	12.65	12.45	12.15	11.80	11.45
1515	12.85	12.10	11.90	11.70	11.35	10.90	10.60
1516	13.50	12.95	12.90	12.50	12.15	11.75	11.45
1517	13.40	12.50	12.35	12.15	11.90	11.50	11.15
1518	13.65	13.10	12.75	12.45	12.20	11.85	11.45
Max.	13.65	13.1	12.9	12.5	12.2	11.85	11.45
Mean	13.32	12.71	12.51	12.25	11.95	11.56	11.22
Min.	12.85	12.1	11.9	11.7	11.35	10.9	10.6
MN+3 sigma	14.24	13.93	13.69	13.26	13.01	12.73	12.33
MN-3 sigma	12.39	11.48	11.32	11.23	10.88	10.38	10.10

(5) I_{OL} EOC mA (V_{OL} = 0.4 V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	9.755	9.705	9.645	9.575	9.490	9.370	9.275
1515	9.985	9.915	9.855	9.765	9.680	9.565	9.450
1516	10.00	9.950	9.915	9.875	9.795	9.665	9.535
1517	9.750	9.695	9.635	9.555	9.485	9.375	9.280
1518	9.790	9.735	9.670	9.625	9.530	9.400	9.305
Max.	10.0	9.95	9.915	9.875	9.795	9.665	9.535
Mean	9.856	9.800	9.744	9.679	9.596	9.475	9.369
Min.	9.75	9.695	9.635	9.555	9.485	9.37	9.275
MN+3 sigma	10.23	10.16	10.13	10.08	10.00	9.874	9.720
MN-3 sigma	9.478	9.432	9.350	9.268	9.186	9.075	9.017

(6) I_{OL} CLK mA (V_{OL} = 0.4 V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	12.15	12.15	12.15	12.15	12.10	12.10	12.00
1515	12.75	12.90	12.90	12.80	12.75	12.70	12.55
1516	11.95	12.00	11.90	11.90	11.80	11.65	11.55
1517	11.70	11.85	11.80	11.70	11.60	11.50	11.35
1518	12.20	12.30	12.30	12.30	12.15	12.00	11.85
Max.	12.75	12.9	12.9	12.8	12.75	12.7	12.55
Mean	12.15	12.24	12.21	12.17	12.08	11.99	11.86
Min.	11.7	11.85	11.8	11.7	11.6	11.5	11.35
MN+3 sigma	13.31	13.45	13.51	13.43	13.39	13.39	13.24
MN-3 sigma	10.98	11.02	10.90	10.90	10.76	10.58	10.47

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(7) V_{OH} V (I_{OH} = 40 μ A)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	3.970	3.970	3.970	3.965	3.965	3.960	3.960
1515	3.985	3.995	3.995	3.990	3.985	3.985	3.975
1516	4.000	4.005	4.000	4.000	3.995	3.990	3.985
1517	3.965	3.975	3.970	3.970	3.970	3.965	3.965
1518	3.965	3.970	3.970	3.970	3.965	3.960	3.960
Max.	4.00	4.005	4.00	4.00	3.995	3.99	3.985
Mean	3.977	3.983	3.981	3.979	3.976	3.972	3.969
Min.	3.965	3.97	3.97	3.965	3.965	3.96	3.96
MN+3 sigma	4.022	4.031	4.026	4.024	4.016	4.015	4.001
MN-3 sigma	3.931	3.934	3.935	3.933	3.935	3.928	3.936

(8) I_{OL} EOC mA (V_{OL} = 0.4 V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	-4.200	-4.150	-4.150	-4.100	-4.100	-4.100	-4.050
1515	-4.600	-4.500	-4.450	-4.450	-4.450	-4.400	-4.405
1516	-4.500	-4.450	-4.450	-4.450	-4.400	-4.400	-4.400
1517	-4.200	-4.050	-4.050	-4.050	-4.000	-4.000	-4.000
1518	-4.150	-4.050	-4.000	-4.000	-4.000	-4.000	-3.950
Max.	-4.15	-4.05	-4.00	-4.00	-4.00	-4.00	-3.95
Mean	-4.33	-4.24	-4.22	-4.21	-4.19	-4.18	-4.161
Min.	-4.6	-4.5	-4.45	-4.45	-4.45	-4.4	-4.405
MN+3 sigma	-3.715	-3.582	-3.569	-3.544	-3.532	-3.565	-3.491
MN-3 sigma	-4.944	-4.897	-4.870	-4.875	-4.847	-4.794	-4.830

(9) NONLIN (IN % FSR)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	0.04623	0.06953	0.07335	0.06031	0.06714	0.07296	0.03154
1515	0.06000	0.1048	0.08249	0.10460	0.08855	0.09866	0.11090
1516	0.05131	0.05928	0.04548	0.06324	0.06214	0.06507	0.08996
1517	0.04598	0.05931	0.06734	0.07332	0.07728	0.03400	0.04919
1518	0.05446	0.04988	0.05946	0.05528	0.08433	0.07865	0.08561
Max.	0.06	0.1048	0.0824	0.1046	0.0885	0.0986	0.1109
Mean	0.0515	0.0685	0.0656	0.0713	0.0758	0.0698	0.0734
Min.	0.0459	0.0498	0.0454	0.0552	0.0621	0.034	0.0315
MN+3 sigma	0.0692	0.1328	0.1078	0.1305	0.1093	0.1406	0.1702
MN-3 sigma	0.0338	4.3E-03	0.0234	0.0121	0.0423	-8.8E-04	-0.0233

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(10) AOL OFF (IN mV)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	-0.9890	-1.698	0.7114	4.171	2.491	1.081	5.912
1515	-1.019	-1.689	-0.9890	1.101	1.431	1.781	-3.339
1516	0.6313	0.3319	1.371	2.831	2.481	5.881	1.842
1517	-4.869	-4.819	-5.809	-0.6084	-3.339	0.4015	-2.628
1518	-0.07820	-1.389	0.3414	4.842	3.151	1.721	-1.279
Max.	0.6313	0.3319	1.371	4.842	3.151	5.881	5.912
Mean	-1.264	-1.852	-0.8748	2.467	1.243	2.173	0.1016
Min.	-4.869	-4.819	-5.809	-0.6084	-3.339	0.4015	-3.339
MN+3 sigma	5.122	3.727	7.793	9.175	9.146	8.614	11.52
MN-3 sigma	-7.651	-7.432	-9.543	-4.241	-6.660	-4.267	-11.32

(11) AOL ERR (IN LSB)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	-0.4051	-0.6957	0.2914	1.709	1.020	0.4430	2.421
1515	-0.4172	-0.6918	-0.4051	-0.4512	0.5863	0.7297	-1.368
1516	0.2568	0.1359	0.5617	1.160	1.016	2.409	0.7543
1517	-1.994	-1.974	-2.379	-0.2492	-1.368	0.1645	-1.077
1518	-0.03203	-0.5688	0.1398	1.983	1.291	0.7051	-0.5238
Max.	0.2568	0.1359	0.5617	1.983	1.291	2.409	2.421
Mean	-0.5183	-0.7588	-0.3582	1.010	0.5090	0.8902	0.0413
Min.	-1.994	-1.974	-2.379	-0.2492	-1.368	0.1645	-1.368
MN+3 sigma	2.096	1.526	3.192	3.758	3.746	3.528	4.719
MN-3 sigma	-3.132	-3.044	-3.908	-1.736	-2.728	-1.747	-4.637

(12) OFFSET (IN mV)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	1.345	1.837	4.924	8.325	8.647	9.344	11.41
1515	1.154	3.714	5.933	8.669	10.21	11.40	11.74
1516	1.133	3.890	6.429	8.835	10.38	11.57	12.24
1517	0.9677	2.689	4.575	8.169	8.486	11.73	11.22
1518	0.6257	4.049	6.606	9.894	10.72	11.05	11.74
Max.	1.345	4.049	6.606	9.894	10.72	11.73	12.24
Mean	1.045	3.235	5.693	8.778	9.688	11.01	11.67
Min.	0.6257	1.837	4.575	8.169	8.486	9.344	11.22
MN+3 sigma	1.854	6.071	8.407	10.81	12.81	13.92	12.83
MN-3 sigma	0.2353	0.4002	2.979	6.745	6.561	8.109	10.50

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(13) OFF ERR (IN LSN)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	0.5510	0.7524	0.7524	3.410	3.542	3.827	4.672
1515	0.4728	1.521	2.430	3.551	4.183	4.668	4.809
1516	0.4643	1.593	2.633	3.619	4.252	4.739	5.014
1517	0.3964	1.102	1.874	3.346	3.476	4.803	4.597
1518	0.2563	1.658	2.706	4.053	4.392	4.526	4.808
Max.	0.551	1.658	2.706	4.053	4.392	4.803	5.014
Mean	0.4281	1.325	2.079	3.595	3.969	4.512	4.78
Min.	0.2563	0.7524	0.7524	3.346	3.476	3.827	4.597
MN+3 sigma	0.7599	2.485	4.509	4.428	5.250	5.703	5.257
MN-3 sigma	0.0963	0.1646	-0.3512	2.762	2.687	3.322	4.302

(14) T CONV μ S (16 bits)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E+0	4.0E10	5.3E10
1514	39.30	39.30	39.30	39.35	39.40	39.45	39.50
1515	39.10	39.05	39.10	39.10	39.20	39.25	39.30
1516	39.60	39.55	39.55	39.55	39.60	39.65	39.70
1517	38.95	38.90	38.90	38.95	39.00	39.05	39.10
1518	39.30	39.30	39.30	39.30	39.35	39.40	39.45
Max.	39.6	39.55	39.55	39.55	39.6	39.65	39.7
Mean	39.25	39.22	39.23	39.25	39.31	39.36	39.41
Min.	38.95	38.9	38.9	38.95	39	39.05	39.1
MN+3 sigma	39.98	39.97	39.96	39.94	39.98	40.03	40.08
MN-3 sigma	38.51	38.46	38.49	38.55	38.63	38.68	38.73

(15) F CLK (IN kHz)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	407.1	407.1	407.1	406.6	406.1	405.6	405.1
1515	409.2	409.7	409.2	409.2	408.2	407.6	407.1
1516	404.0	404.6	404.6	404.6	404.0	403.5	403.0
1517	410.8	411.3	411.3	410.8	410.3	409.7	409.2
1518	407.1	407.1	407.1	407.1	406.6	406.1	405.6
Max.	410.8	411.3	411.3	410.8	410.3	409.7	409.2
Mean	407.6	407.9	407.8	407.6	407.0	406.5	406.0
Min.	404.0	404.6	404.6	404.6	404.0	403.5	403.0
MN+3 sigma	415.3	415.7	415.4	414.8	414.1	413.4	412.9
MN-3 sigma	399.9	400.1	400.2	400.4	399.9	399.5	399.0

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(16) T_{CLEH} (CV-/EOC+)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	90.70	91.40	92.00	92.80	93.60	94.40	96.25
1515	94.00	95.20	96.50	97.60	98.80	103.0	104.5
1516	81.80	83.00	83.60	84.20	85.00	86.40	87.00
1517	90.80	92.20	92.90	93.60	94.60	97.00	98.10
1518	90.60	92.00	92.60	93.20	94.20	96.50	97.40
Max.	94.00	95.2	96.5	97.6	98.8	103.00	104.5
Mean	89.58	90.76	91.52	92.28	93.24	95.46	96.65
Min.	81.8	83.00	83.6	84.2	85.00	86.4	87.00
MN+3 sigma	103.3	104.5	105.8	107.0	108.3	113.4	115.4
MN-3 sigma	75.84	77.01	77.22	77.54	78.11	77.49	77.82

(17) V_{REF} V (No Load)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	9.998	9.999	10.00	10.00	10.00	10.00	10.00
1515	9.998	9.998	9.999	10.00	10.00	10.00	10.00
1516	10.00	10.00	10.00	10.00	10.00	10.00	10.00
1517	9.997	9.998	9.999	10.00	10.00	10.00	10.00
1518	9.999	10.00	10.00	10.00	10.00	10.01	10.01
Max.	10.00	10.00	10.00	10.00	10.00	10.01	10.01
Mean	9.998	9.999	9.999	10.00	10.00	10.00	10.00
Min.	9.997	9.998	9.999	10.00	10.00	10.00	10.00
MN+3 sigma	10.00	10.00	10.00	10.00	10.00	10.01	10.01
MN-3 sigma	9.994	9.996	9.997	10.00	10.00	9.988	9.988

(18) V_{REFL} V (10 = 1 mA)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	9.998	9.998	9.999	10.00	10.00	10.00	10.00
1515	9.998	9.998	9.999	9.999	10.00	10.00	10.00
1516	10.00	10.00	10.00	10.00	10.00	10.00	10.00
1517	9.997	9.998	9.999	10.00	10.00	10.00	10.00
1518	9.999	10.00	10.00	10.00	10.00	10.00	10.01
Max.	10.00	10.00	10.00	10.00	10.00	10.00	10.01
Mean	9.998	9.998	9.999	9.999	10.00	10.00	10.00
Min.	9.997	9.998	9.999	9.999	10.00	10.00	10.00
MN+3 sigma	10.00	10.00	10.00	10.00	10.00	10.00	10.01
MN-3 sigma	9.994	9.995	9.997	9.998	10.00	10.00	9.988

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(19) I_{CC} mA (V_{CC} = +5V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	46.00	45.75	45.50	45.30	45.15	44.95	44.75
1515	45.50	45.05	44.85	44.65	44.55	44.30	44.20
1516	50.60	50.15	49.95	49.75	49.60	49.40	49.25
1517	45.20	44.65	44.40	44.25	44.15	44.00	43.75
1518	45.45	45.00	44.70	44.50	44.30	44.20	44.05
Max.	50.6	50.15	49.95	49.75	49.6	49.4	49.25
Mean	46.55	46.12	45.88	45.69	45.55	45.37	45.2
Min.	45.2	44.65	44.4	44.25	44.15	44.00	43.75
MN+3 sigma	53.39	52.98	52.81	52.59	52.43	52.21	52.07
MN-3 sigma	39.70	39.25	38.94	38.78	38.66	38.52	38.32

(20) I_{DD} mA (V_{DD} = +15 V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	17.60	17.85	17.95	18.00	17.95	17.90	17.75
1515	17.20	17.35	17.45	17.45	17.40	17.30	17.20
1516	17.15	17.30	17.35	17.35	17.30	17.25	17.25
1517	17.40	17.55	17.65	17.65	17.55	17.50	17.50
1518	17.20	17.40	17.50	17.50	17.45	17.40	17.30
Max.	17.6	17.85	17.95	18.00	17.95	17.9	17.75
Mean	17.31	17.49	17.58	17.59	17.53	17.47	17.4
Min.	17.15	17.3	17.35	17.35	17.3	17.25	17.2
MN+3 sigma	17.87	18.15	18.28	18.35	18.28	18.24	18.07
MN-3 sigma	16.74	16.82	16.87	16.82	16.77	16.69	16.72

(21) I_{EE} mA (V_{EE} = 15 V)

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	-19.70	-19.70	-19.60	-19.55	-19.40	-19.10	-18.95
1515	-18.70	-18.60	-18.50	-18.40	-18.30	-18.05	-17.85
1516	-19.75	-19.60	-19.50	-19.40	-19.20	-19.00	-18.85
1517	-19.00	-18.95	-18.90	-18.75	-18.60	-18.45	-18.20
1518	-19.25	-19.20	-19.25	-19.15	-19.05	-18.85	-18.65
Max.	-18.7	-18.6	-18.5	-18.4	-18.3	-18.05	-17.85
Mean	-19.28	-19.21	-19.15	-19.05	-18.91	-18.69	-18.5
Min.	-19.75	-19.7	-19.6	-19.55	-19.4	-19.1	-18.95
MN+3 sigma	-17.92	-17.84	-17.79	-17.63	-17.55	-17.38	-17.10
MN-3 sigma	-20.63	-20.57	-20.50	-20.46	-20.26	-19.99	-19.89

DEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter

TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-A

SOURCE: Dynamitron, 2.5 MeV e⁻

(continued)

(22) Group I_{IL} INS μ A

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	-220.8	-218.3	-216.5	-215.5	-214.0	-213.0	-212.0
1515	-219.0	-212.8	-211.7	-210.8	-210.0	-208.2	-209.0
1516	-228.3	-224.8	-225.3	-223.3	-222.0	-221.3	-220.8
1517	-219.8	-213.5	-212.8	-212.0	-210.8	-209.2	-208.2
1518	-222.5	-218.3	-216.0	-214.3	-213.0	-213.0	-212.0
Max.	-219.0	-212.8	-211.7	-210.8	-210.0	-208.2	-208.2
Mean	-222.0	-217.5	-216.4	-215.1	-213.9	-212.9	-212.4
Min.	-228.3	-224.8	-225.3	-223.3	-222.0	-221.3	-220.8
MN+3 sigma	-210.9	-203.1	-200.4	-200.4	-199.6	-197.4	-197.3
MN-3 sigma	-233.2	-231.9	-232.5	-229.8	-228.2	-228.4	-227.4

(23) Group I_{IH} INS μ A

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1515	1.000	1.000	1.000	1.000	1.000	1.000	1.000
1516	1.000	1.175	1.325	1.450	1.475	1.625	1.500
1517	4.900	14.08	21.65	4016	4013	14030	17700
1518	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Max.	4.9	14.08	21.65	4016	4013	14030.	17700
Mean	1.78	3.651	5.195	804.0	803.4	2806.	3540.
Min.	1	1	1	1	1	1	1
MN+3 sigma	7.012	21.14	32.79	6190	6185.	21628.5	27286.4
MN-3 sigma	-3.452	-13.84	-22.40	-4582.	-4579.	-16014.7	-20204.6

(24) Group V_{OL} DAT mV

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	140.0	141.4	142.1	142.3	142.9	143.4	143.3
1515	141.1	145.6	146.2	146.3	146.4	147.6	146.9
1516	141.4	144.0	143.1	144.1	144.5	144.8	144.8
1517	138.7	143.0	143.2	143.6	143.8	144.6	145.3
1518	133.8	136.3	137.7	138.8	138.9	139.0	139.7
Max.	141.4	145.6	146.2	146.3	146.4	147.6	146.9
Mean	139.0	142.0	142.4	143.0	143.3	143.8	144.0
Min.	133.8	136.3	137.7	138.8	138.9	139.0	139.7
MN+3 sigma	148.2	152.7	151.6	151.3	151.6	153.2	152.1
MN-3 sigma	129.7	131.3	133.2	134.7	134.9	134.4	135.8

DDEVICE TYPE: MN5290 Hyb. 16 Bit A/D Converter TEST DATE: 10-16-84

MFG: MNC

DATE CODE: 8419

REF: JPL LOG 1081-B

SOURCE: Dynamitron, 2.5 MeV e⁻

(25) Group I_{OL} DAT mA

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	16.33	15.81	15.40	14.97	14.39	13.71	13.10
1515	15.08	14.38	13.91	13.43	12.84	12.11	11.52
1516	16.95	16.30	16.01	15.49	14.90	14.25	13.66
1517	15.95	14.92	14.45	13.95	13.35	12.64	12.07
1518	16.20	15.49	14.92	14.35	14.01	13.11	12.46
Max.	16.95	16.3	16.01	15.49	14.9	14.25	13.66
Mean	16.10	15.38	14.93	14.43	13.89	13.16	12.56
Min.	15.08	14.38	13.91	13.43	12.84	12.11	11.52
MN+3 sigma	18.14	17.63	17.38	16.88	16.35	15.70	15.08
MN-3 sigma	14.06	13.12	12.49	11.99	11.44	10.62	10.03

(26) Group V_{OH} DAT V

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	3.666	3.676	3.678	3.677	3.675	3.671	3.667
1515	3.637	3.680	3.678	3.673	3.663	3.665	3.648
1516	3.694	3.713	3.697	3.703	3.699	3.691	3.683
1517	3.658	3.706	3.699	3.697	3.690	3.691	3.687
1518	3.652	3.678	3.688	3.694	3.688	3.676	3.674
Max.	3.694	3.713	3.699	3.703	3.699	3.691	3.687
Mean	3.661	3.690	3.688	3.688	3.683	3.678	3.671
Min.	3.637	3.676	3.678	3.673	3.663	3.665	3.648
MN+3 sigma	3.724	3.743	3.718	3.728	3.725	3.714	3.718
MN-3 sigma	3.598	3.638	3.657	3.649	3.640	3.643	3.625

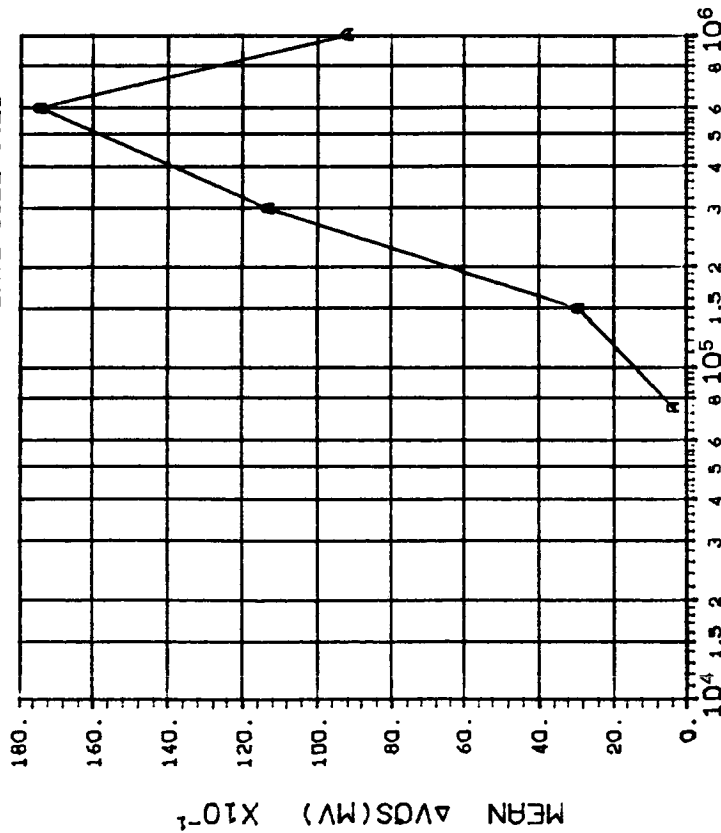
(27) Group I_{OH} DAT mA

Fluence (e/cm ²)	Initial	1.2E12	3.0E12	6.0E12	1.2E13	2.4E13	4.0E13
Flux (e/cm ² /s)	Initial	4.0E9	6.0E9	1.0E10	2.0E10	4.0E10	5.3E10
1514	-4.334	-4.288	-4.263	-4.224	-4.228	-4.209	-4.186
1515	-4.522	-4.394	-4.375	-4.369	-4.360	-4.316	-4.263
1516	-4.797	-4.722	-4.734	-4.697	-4.681	-4.666	-4.635
1517	-4.250	-4.122	-4.116	-4.094	-4.084	-4.063	-4.026
1518	-4.244	-4.156	-4.116	-4.078	-4.069	-4.072	-4.066
Max.	-4.244	-4.122	-4.116	-4.078	-4.069	-4.063	-4.026
Mean	-4.429	-4.336	-4.320	-4.292	-4.284	-4.265	-4.235
Min.	-4.797	-4.722	-4.734	-4.697	-4.681	-4.666	-4.635
MN+3 sigma	-3.726	-3.612	-3.554	-3.528	-3.530	-3.523	-3.507
MN-3 sigma	-5.131	-5.060	-5.086	-5.056	-5.038	-5.007	-4.963

DEVICE TYPE: OP-08 OP AMP

MFG: MPS 6 DEVICES TEST DATE 10-02-84

REF: JPL LOG 1083 DATE CODE 8420



DOSE, rads(Si) 2.5 MeV electrons

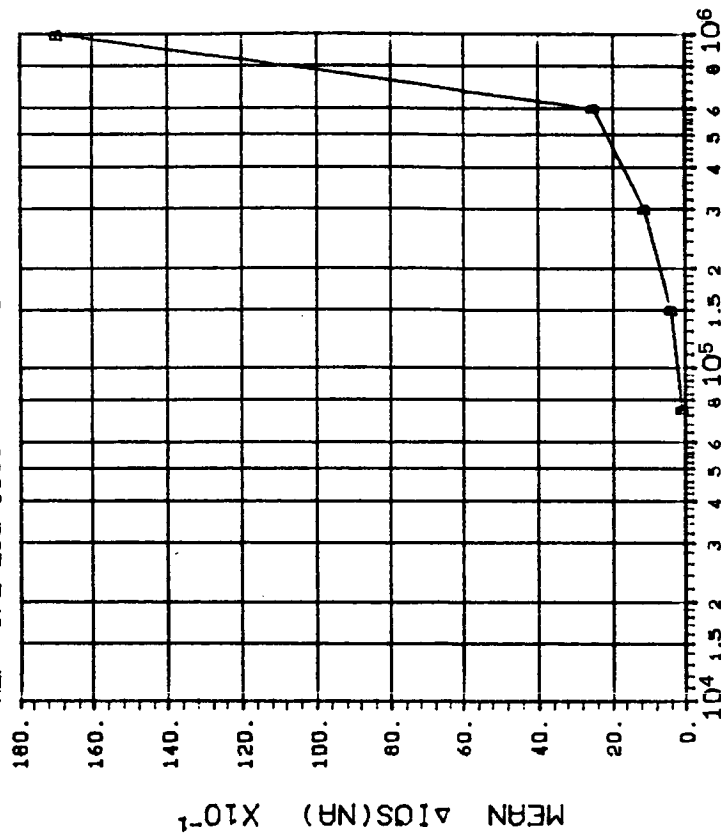
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	150
	300	600
	1000	
	.1493	.8680
	6.282	12.33
	5.857	

DEVICE TYPE: OP-08 OP AMP

MFG: MPS 6 DEVICES TEST DATE 10-02-84

REF: JPL LOG 1083 DATE CODE 8420



DOSE, rads(Si) 2.5 MeV electrons

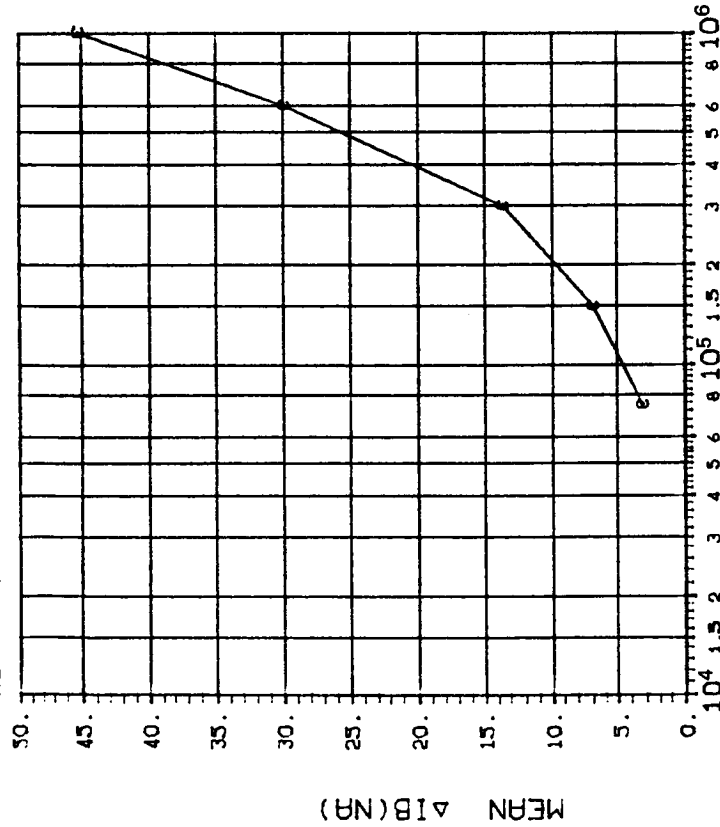
(2)ΔIOS(NR): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	150
	300	600
	1000	
	.0335	.3481
	.8644	2.015
	25.52	

DEVICE TYPE: OP-08 JP AMP

MFG: MPS 6 DEVICES TEST DATE 10-02-84

REF: JPL LOG 1083 DATE CODE 8420



DOSE, rads(Si) 2.5 MeV electrons

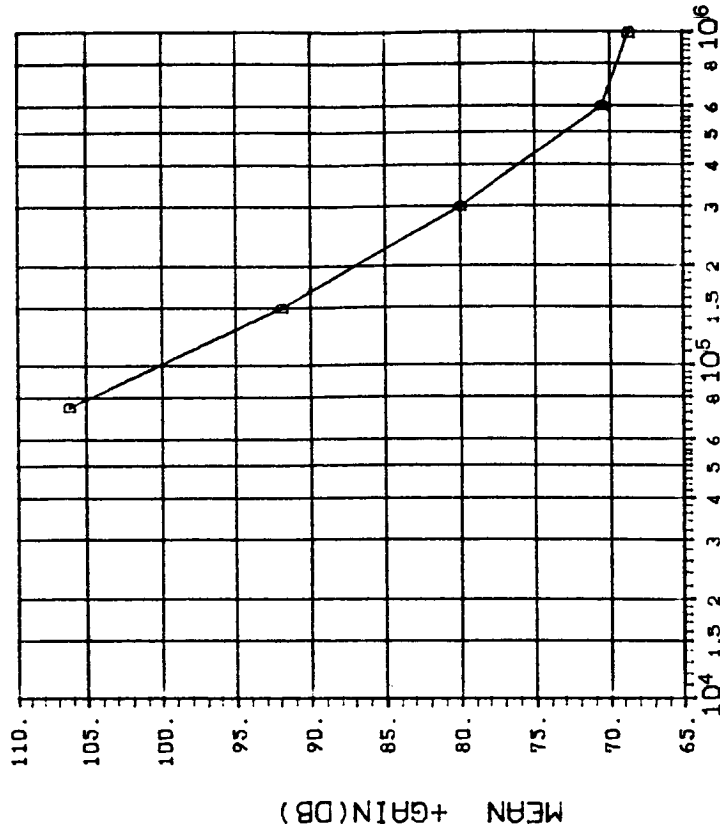
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600 1000
C	.8365	1.389 5.852 16.56 26.62

DEVICE TYPE: OP-08 OP AMP

MFG: MPS 6 DEVICES TEST DATE 10-02-84

REF: JPL LOG 1083 DATE CODE 8420



DOSE, rads(Si) 2.5 MeV electrons

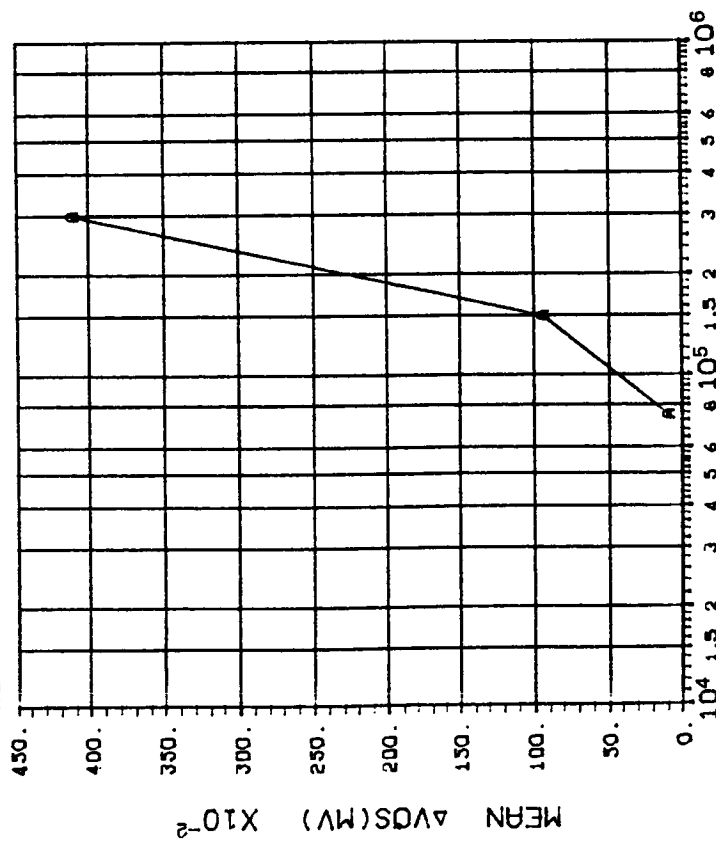
(4)+GAIN IN DB(5.0MA LOAD, +10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
	75	150 300 600 1000
D	5.00	5.086 6.216 7.419 9.441 2.734

INITIAL MEAN VALUE +GAIN(DB) = 1.12X10¹²

DEVICE TYPE: OP-08 OP AMP

MFG: PMJ TEST DATE 10-12-84
REF: JPL LOG 1108 DATE CODE 8414



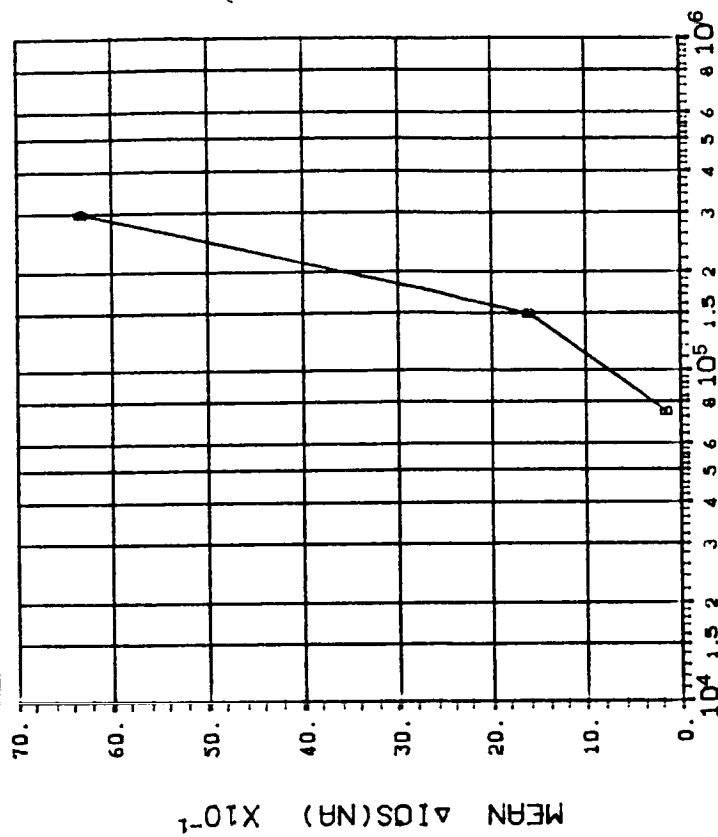
DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	300
	1.230	6.498 *****

DEVICE TYPE: OP-08 OP AMP

MFG: PMJ TEST DATE 10-12-84
REF: JPL LOG 1108 DATE CODE 8414

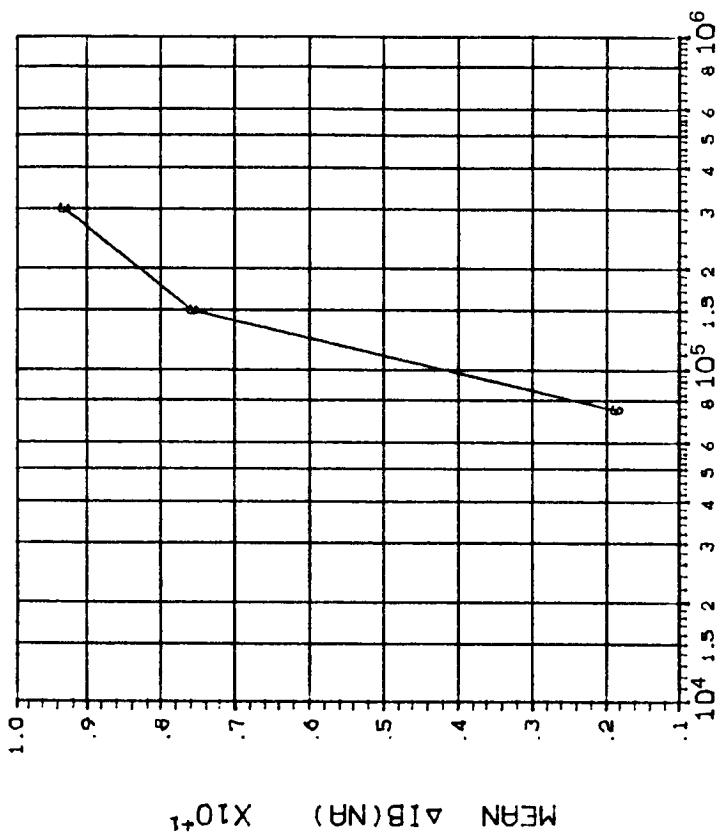


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	300
	.2050	3.725 15.22 *****

DEVICE TYPE: OP-08 OP AMP
 MFG: PMI 6 DEVICES TEST DATE 10-12-84
 REF: JPL LOG 1108 DATE CODE 8414



DOSE, rads(Si) 2.5 MeV electrons

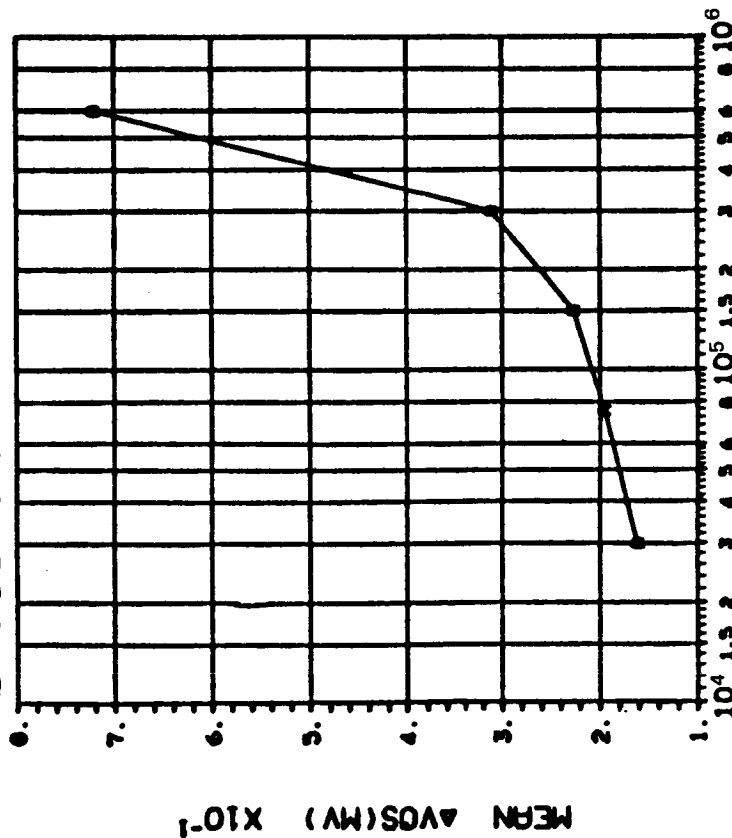
(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600
C	.5428	6.548 7.550 *****

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 11-9-81

REF: JPL LOG 0790 DATE CODE 8127



DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

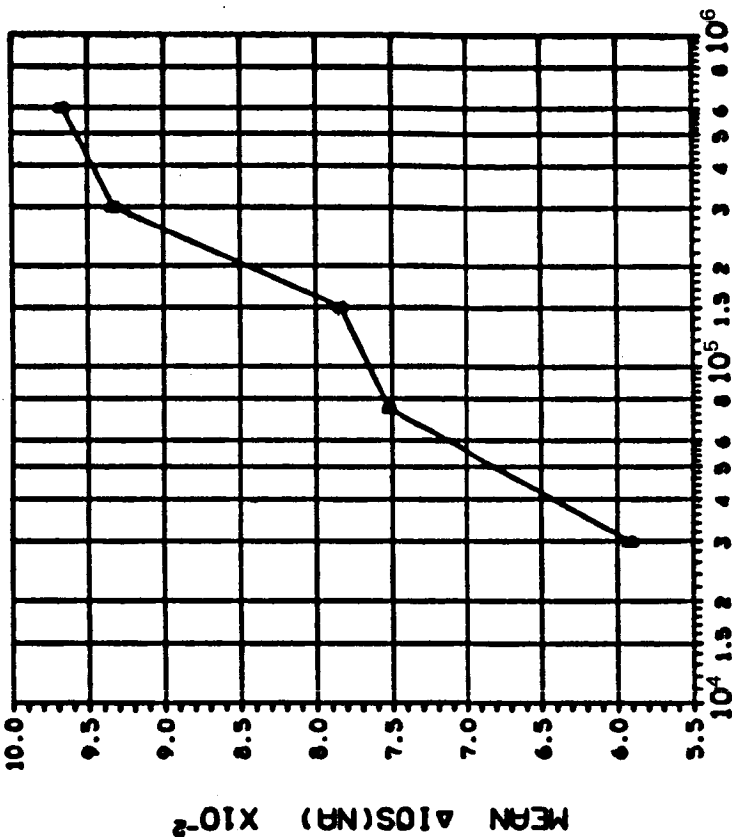
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)				
	30	75	150	300	600
A	.0865	.1864	.2040	.2073	.7351

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 11-9-81

REF: JPL LOG 0790 DATE CODE 8127



DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(MV): VS DOSE

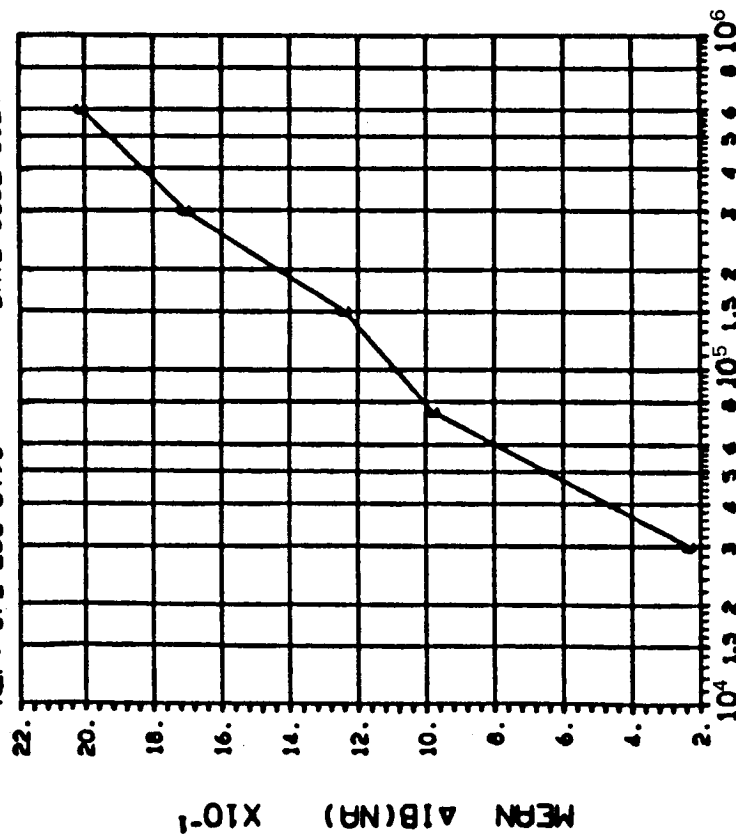
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)				
	30	75	150	300	600
B	.0318	.0492	.0634	.1117	.4029

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 11-9-81

REF: JPL LOG 0790 DATE CODE 8127



DOSE, rads(Si) 2.5 MeV electrons

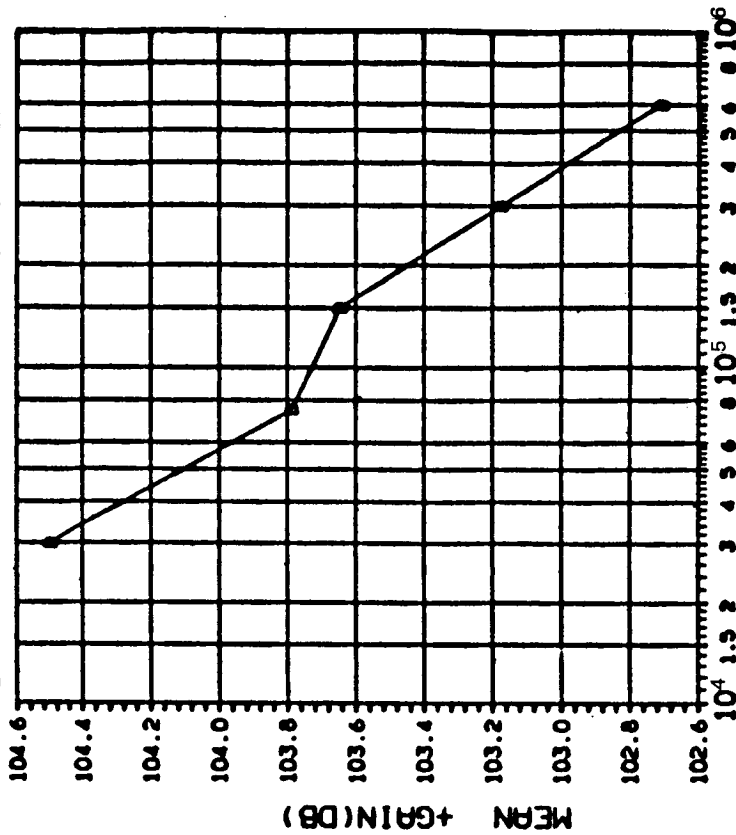
(3) ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	30	.2670
	75	.5157
	150	.7665
	300	.2866
	600	1.348

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 11-9-81

REF: JPL LOG 0790 DATE CODE 8127



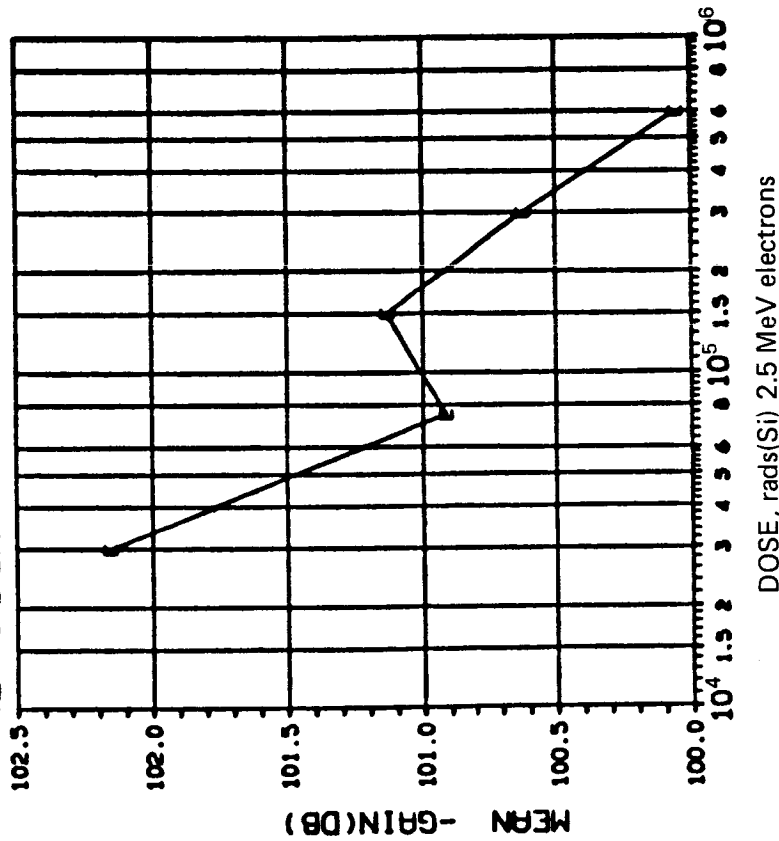
DOSE, rads(Si) 2.5 MeV electrons

(4) +GAIN IN DB(5.0mA LOAD, +10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	30	1.539
	75	1.386
	150	1.329
	300	.6688
	600	.8522

INITIAL MEAN VALUE +GAIN(DB) = 1.13 × 10⁻²

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 6 DEVICES TEST DATE 11-9-81
 REF: JPL LOG 0790 DATE CODE 8127



(5)-GAIN IN DB(5.0MA LOAD,-10V): VS DOSE

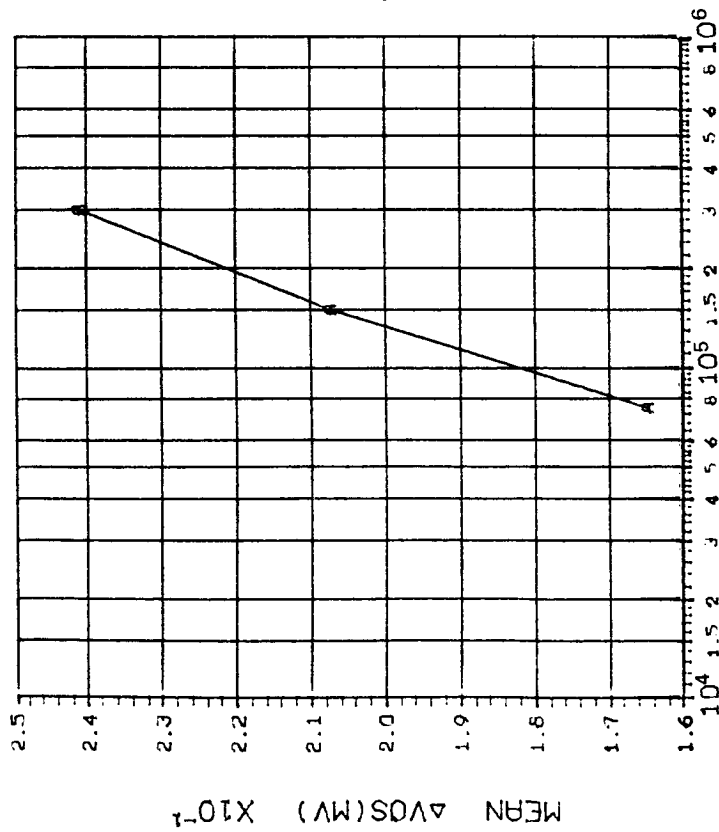
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I_L (mA)	DOSE, kilorads(Si)
E	5.00	30 75 150 300 600
		1.698 1.047 1.351 1.050 .7184

INITIAL MEAN VALUE -GAIN(DB) = 1.01×10^{-2}

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-1 DATE CODE 8229



DOSE, rads(Si) Co 60 Gammas

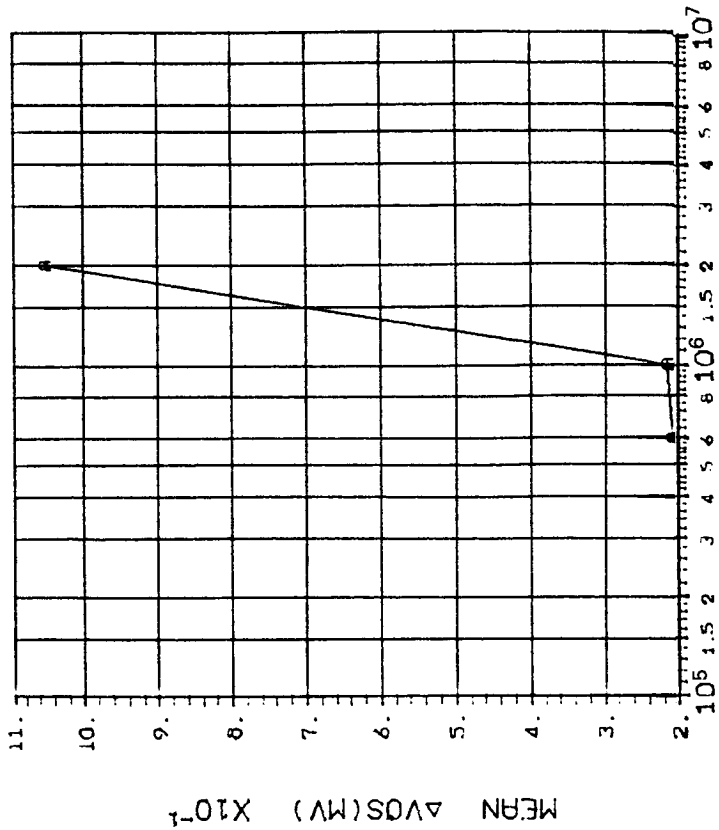
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75	300
	.1219	.1408 .1672

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-2 DATE CODE 8229



DOSE, rads(Si) Co 60 Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	600	1000 2000
	.1713	.2091 .6931

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-1 DATE CODE 8229

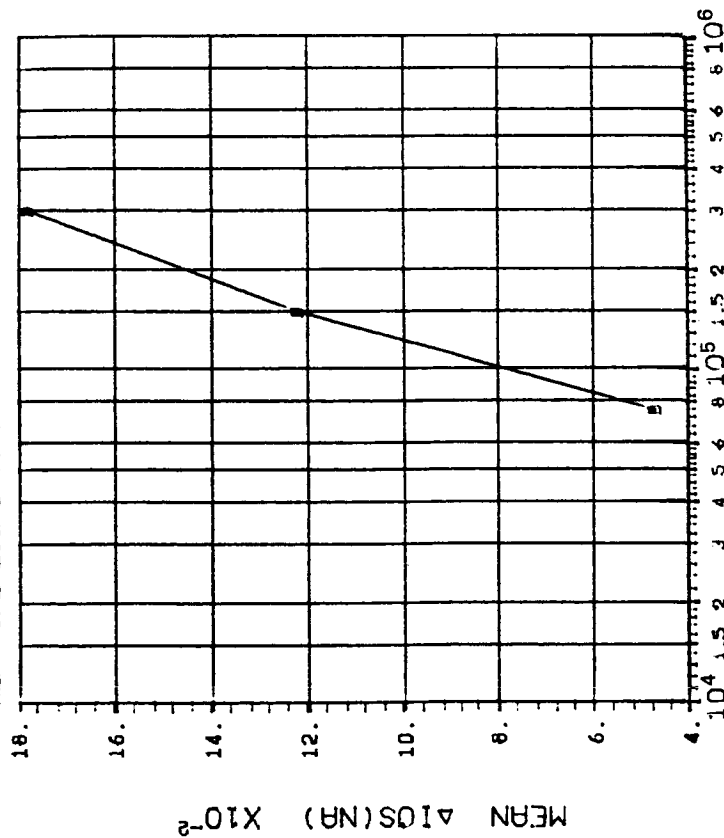


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	.0462 .1131 .2348

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-2 DATE CODE 8229

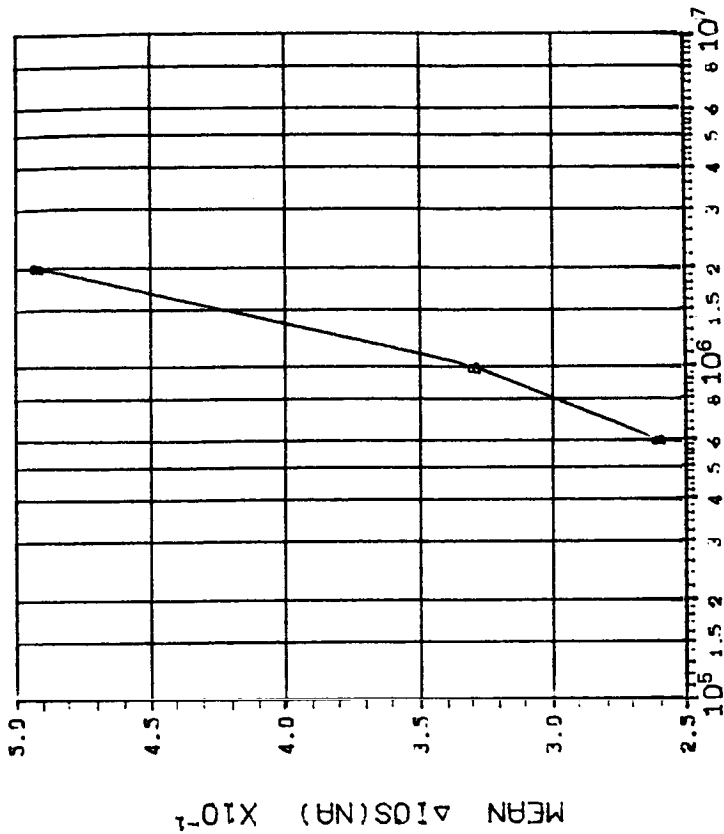
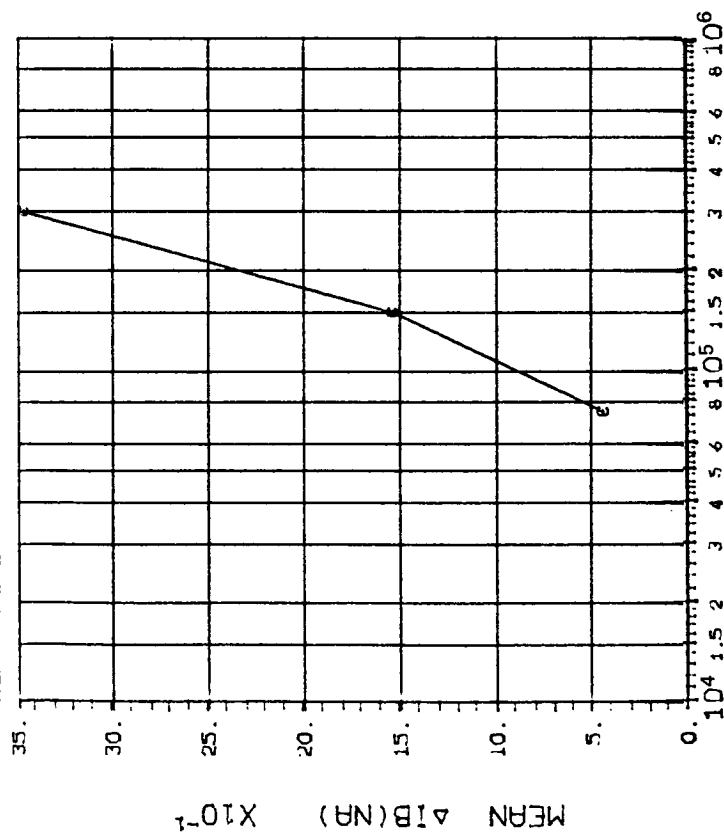


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	.4139 .4241 .3600

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0668-1 DATE CODE 8229



DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

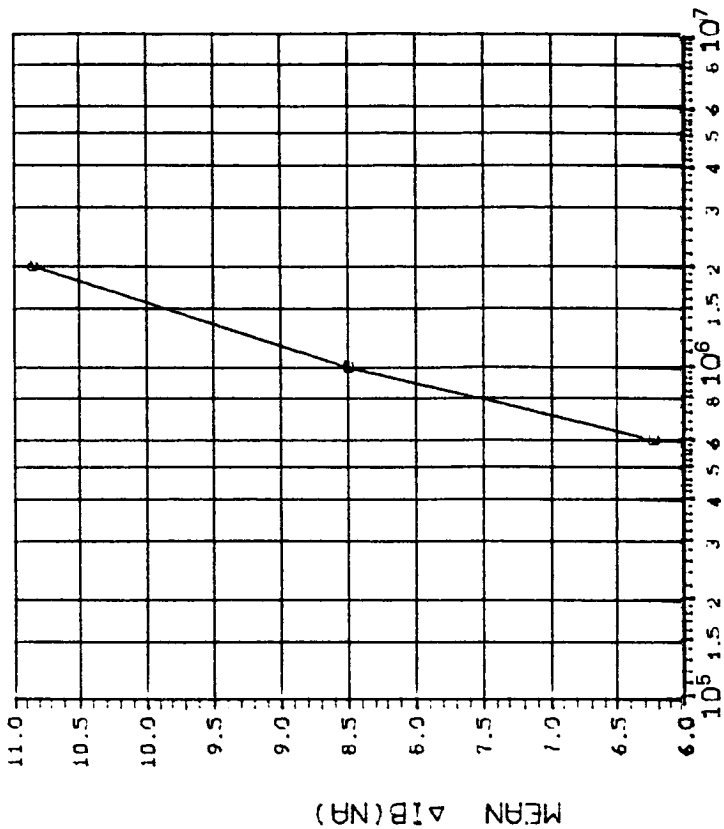
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
	75 150 300
C	.1896 .5542 1.233

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-2 DATE CODE 8229



DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

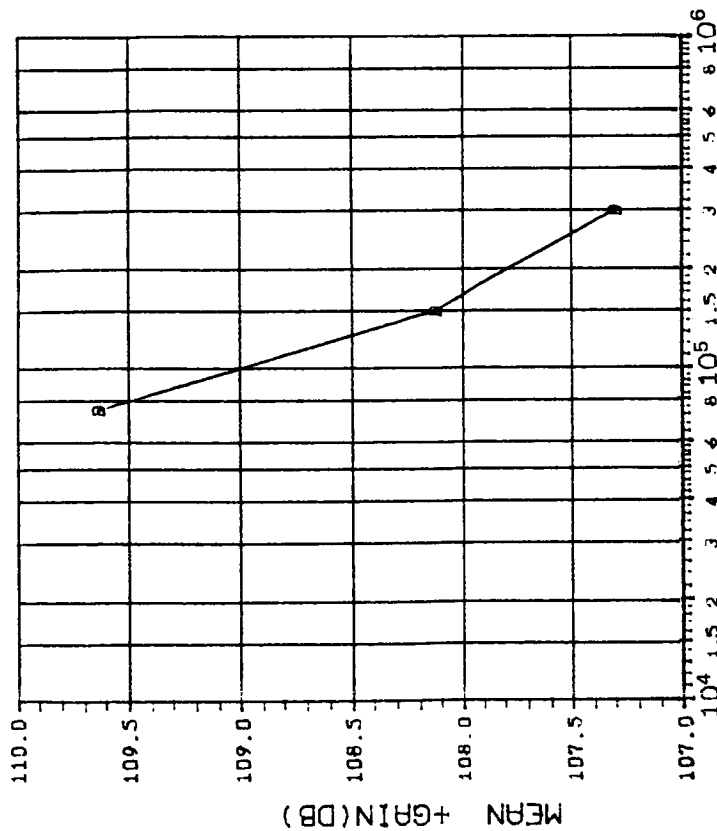
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
	600 1000 2000
C	2.272 3.166 3.524

DEVICE TYPE: OP-15 FET OP AMP

MFG: PM1 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-1 DATE CODE 8229



DOSE, rads(Si) Co 60 Gammas

(4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

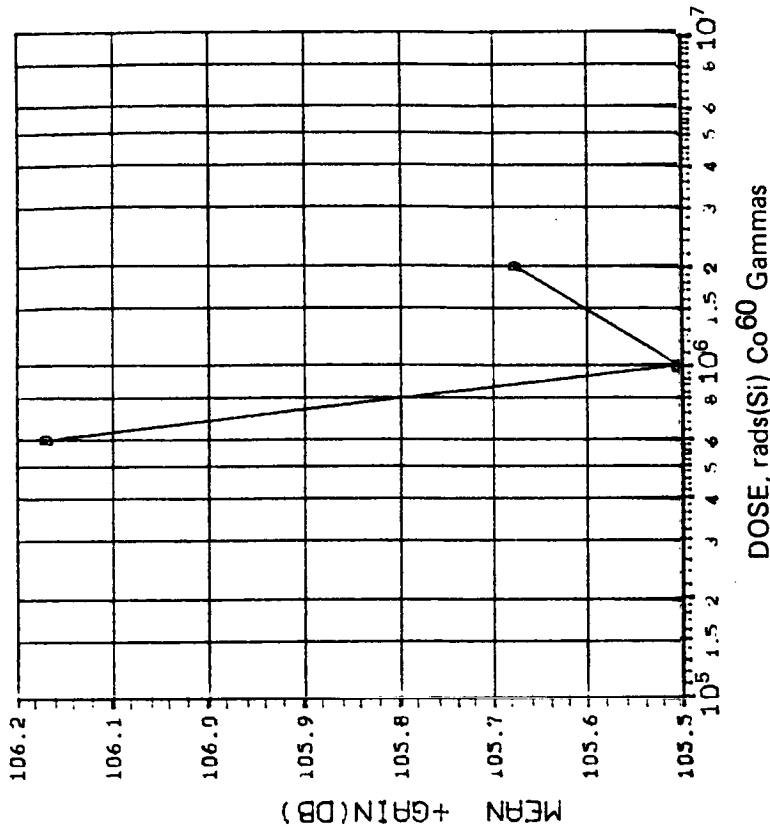
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	75 150 300
		1.420 1.671 1.269

INITIAL MEAN VALUE +GAIN(DB) = 1.12X10⁺²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PM1 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-2 DATE CODE 8229



DOSE, rads(Si) Co 60 Gammas

(4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

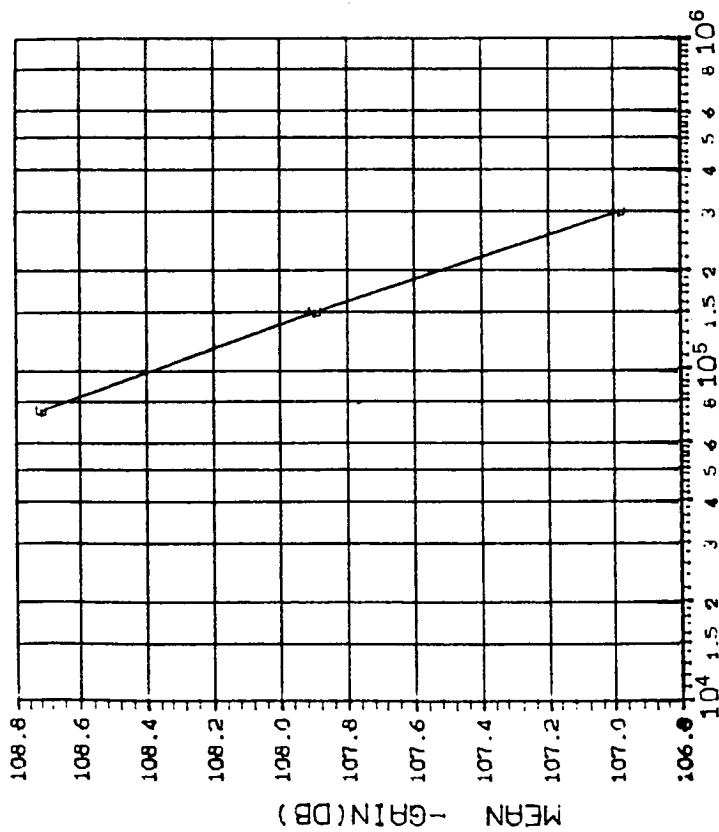
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	600 1000 2000
		.1742 1.192 .7230

INITIAL MEAN VALUE +GAIN(DB) = 1.12X10⁺²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-1 DATE CODE 8229



DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V): VS DOSE

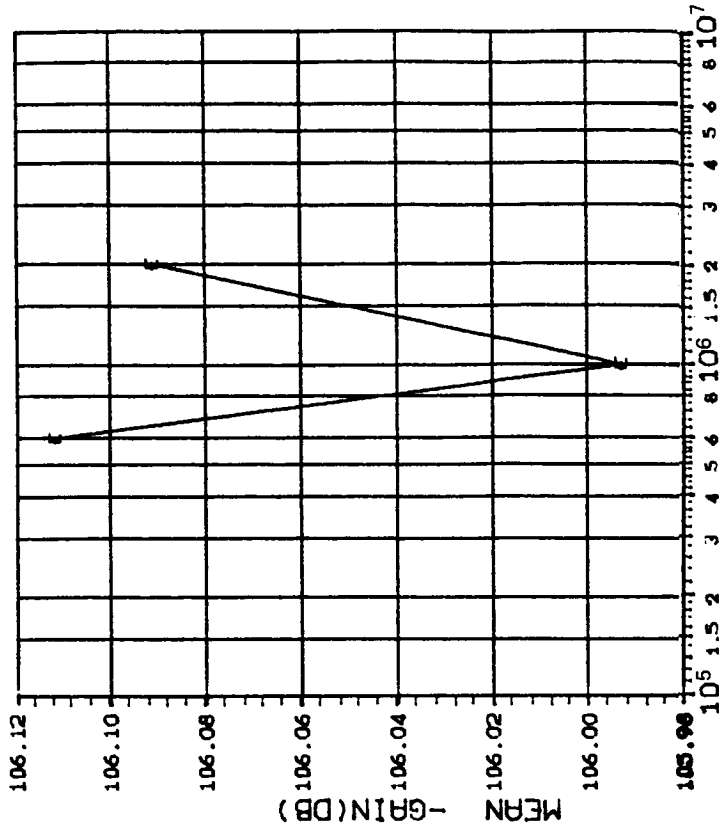
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300
		2.376 1.176 .5622

INITIAL MEAN VALUE -GAIN(DB) = 1.12X10⁺²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 6 DEVICES TEST DATE 04-13-83

REF: JPL LOG 0868-2 DATE CODE 8229



DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V): VS DOSE

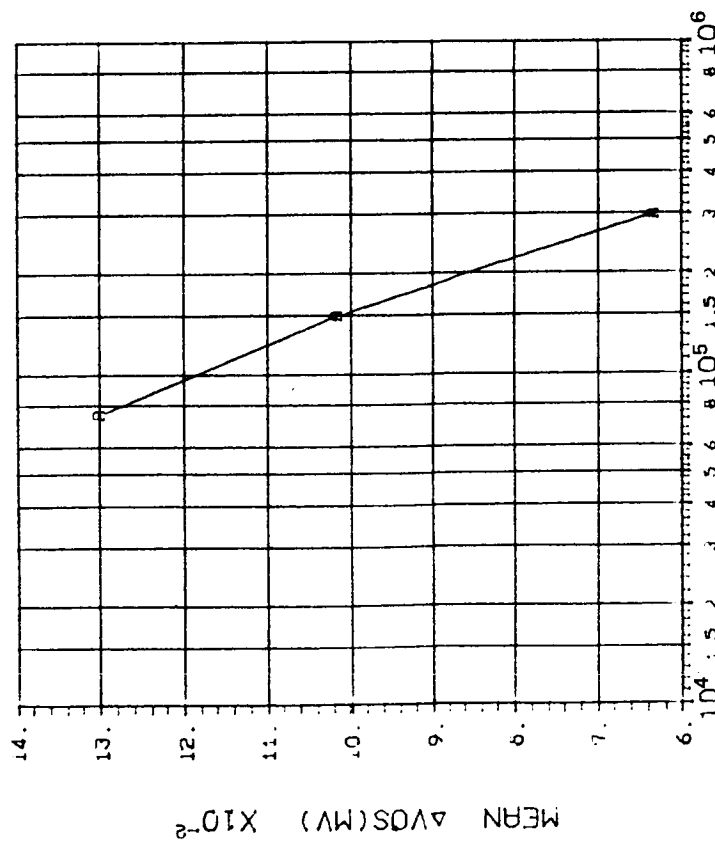
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	600 1000 2000
		.2642 .1687 .5110

INITIAL MEAN VALUE -GAIN(DB) = 1.12X10⁺²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-1 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

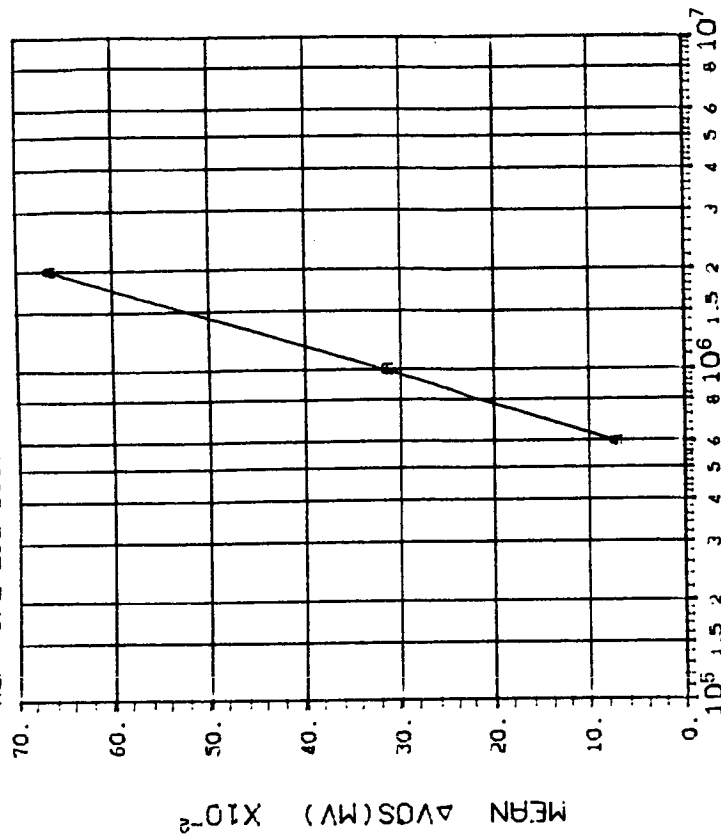
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
A	.0641	.0560
	300	.0600

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

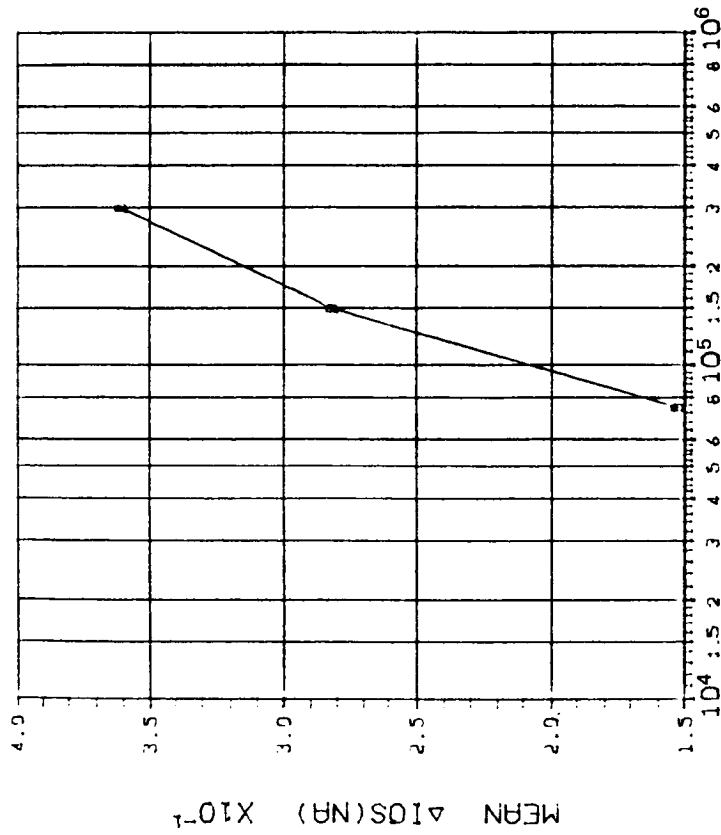
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000
A	.1019	.1581
	2000	.2797

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-1 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

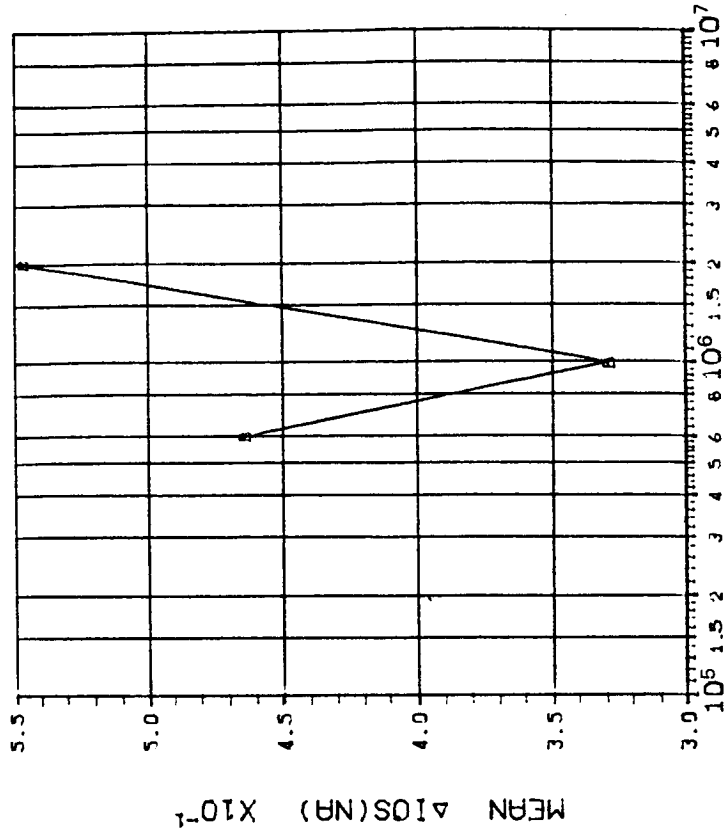
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	150
	300	300
.0470 .1800 .2686		

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	600	1000
	2000	2000
.3228 .2645 .5479		

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-1 DATE CODE 8229

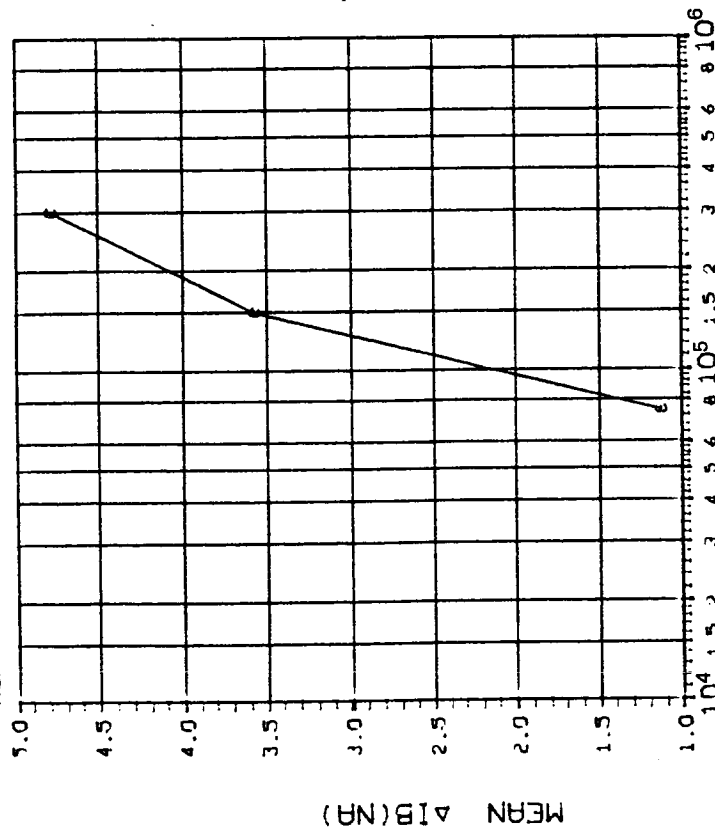


TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
C	75 150 300
	.6768 1.037 1.721

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-2 DATE CODE 8229

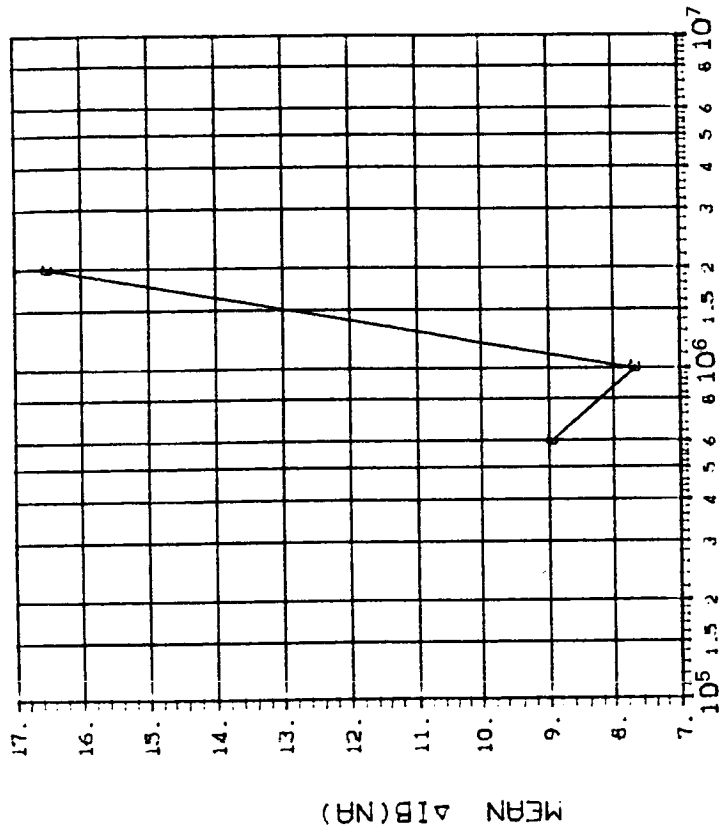


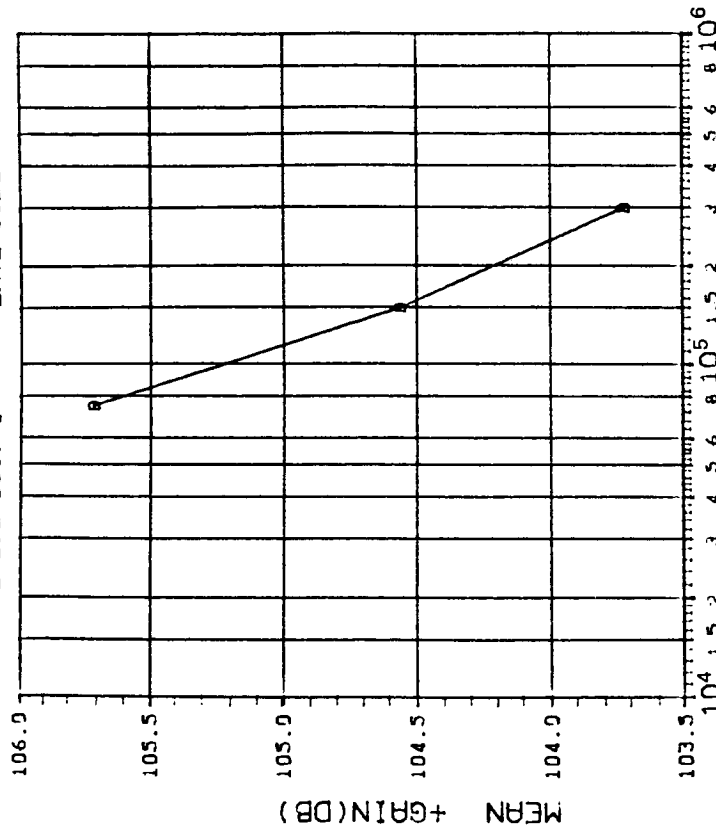
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
C	600 1000 2000
	3.148 1.562 4.702

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-1 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

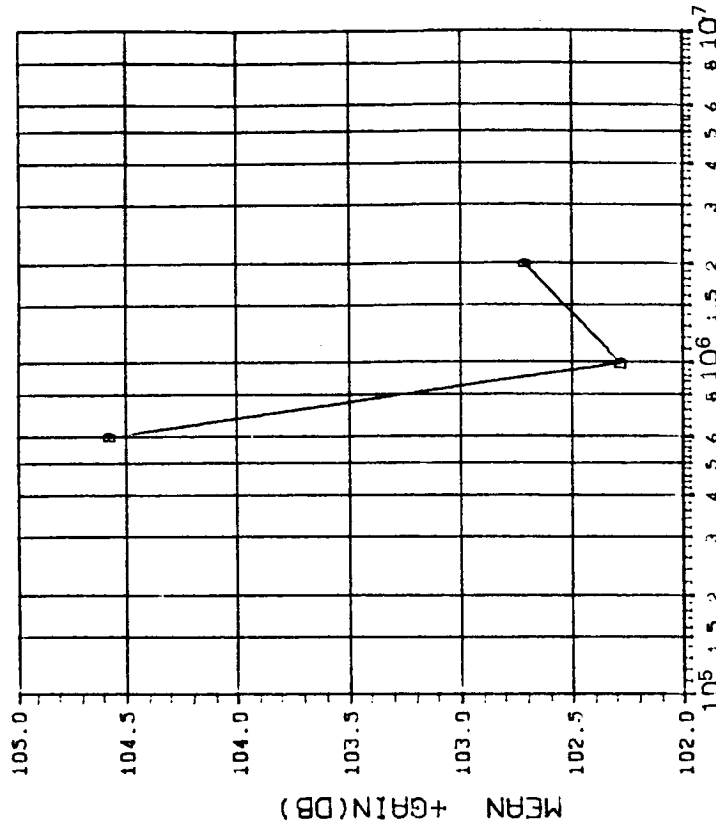
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	75 150 300
		1.673 .6478 .5519

INITIAL MEAN VALUE +GAIN(DB) = 1.08X10⁺²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

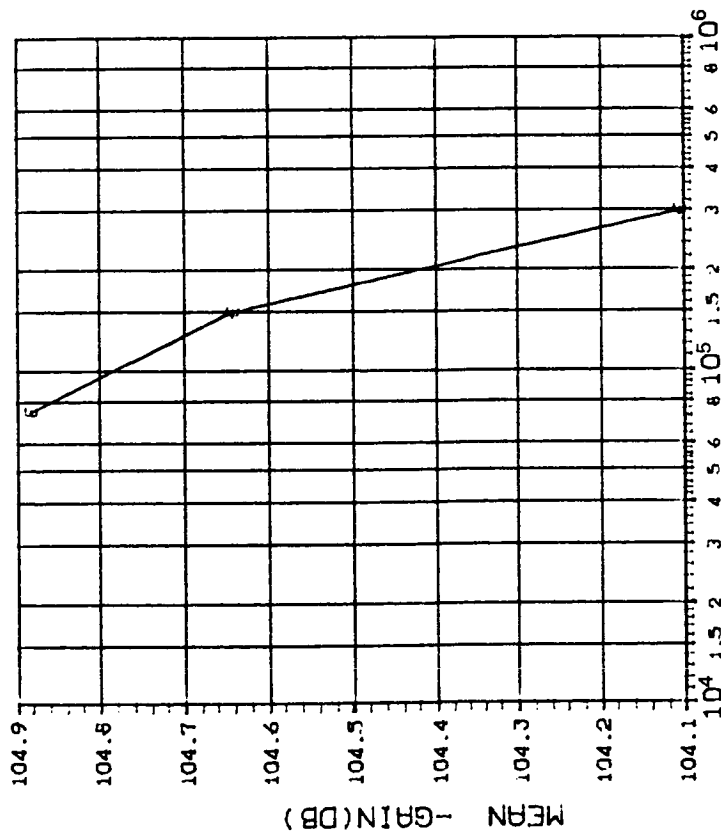
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	600 1000 2000
		2.316 .5531 .5848

INITIAL MEAN VALUE +GAIN(DB) = 1.08X10⁺²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-1 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(5.MA LOAD, -10V): VS DOSE

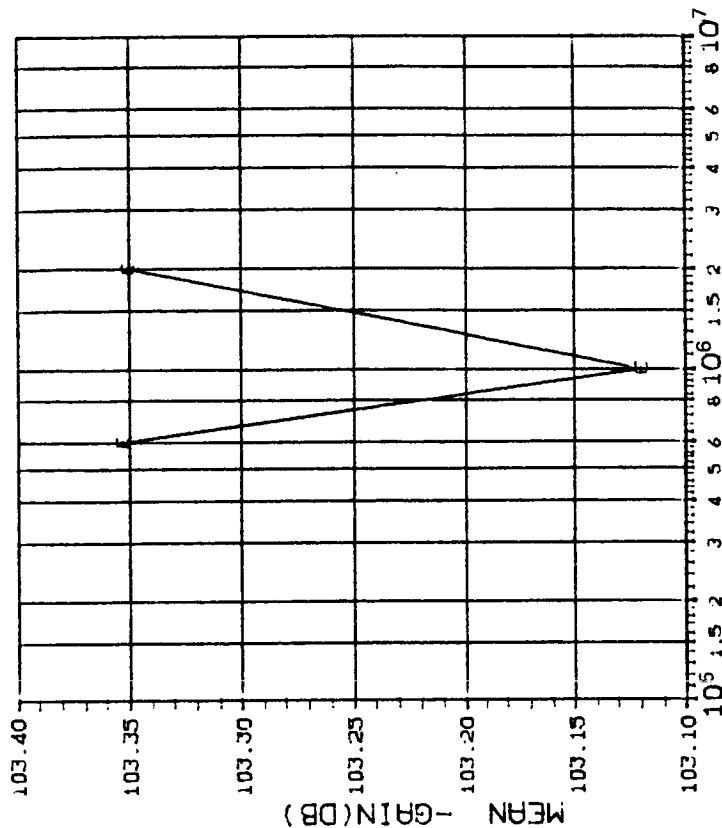
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I_L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300
		1.309 .7265 1.161

INITIAL MEAN VALUE -GAIN(DB) = $1.08 \times 10^{+2}$

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-28-83

REF: JPL LOG 0869-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(5.MA LOAD, -10V): VS DOSE

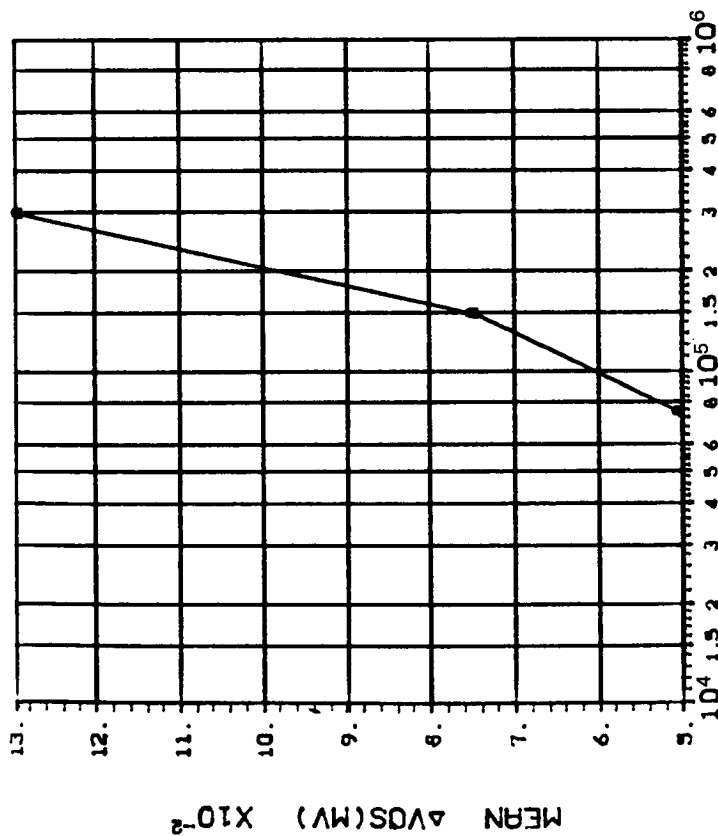
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I_L (mA)	DOSE, kilorads(Si)
E	5.00	600 1000 2000
		.2787 .7246 .8598

INITIAL MEAN VALUE -GAIN(DB) = $1.08 \times 10^{+2}$

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMJ 3 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0870-1 DATE CODE 8150



DOSE, rads(Si) Co 60 Gammas

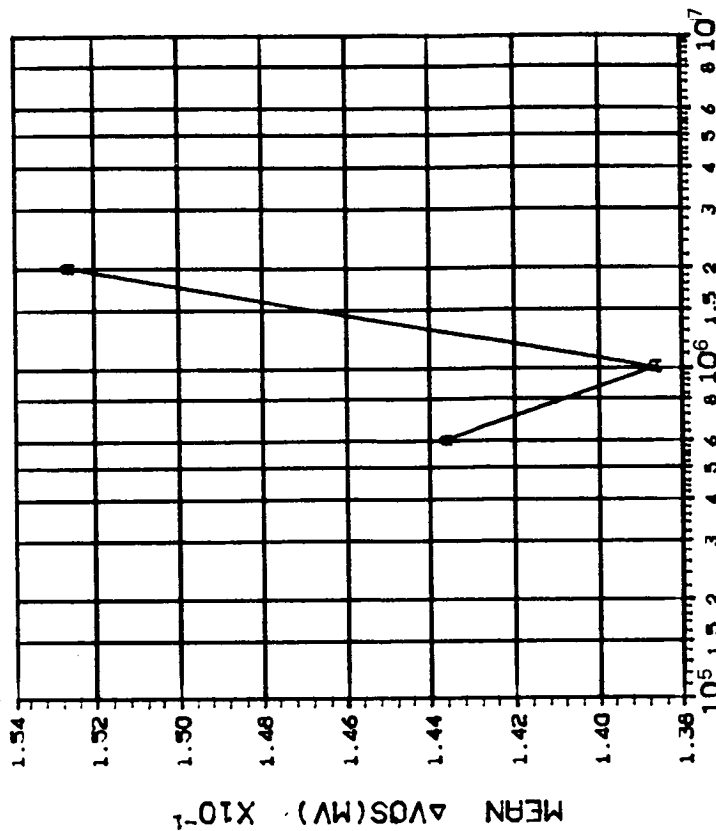
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.0300 .0646 .1222

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMJ 3 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0870-2 DATE CODE 8150



DOSE, rads(Si) Co 60 Gammas

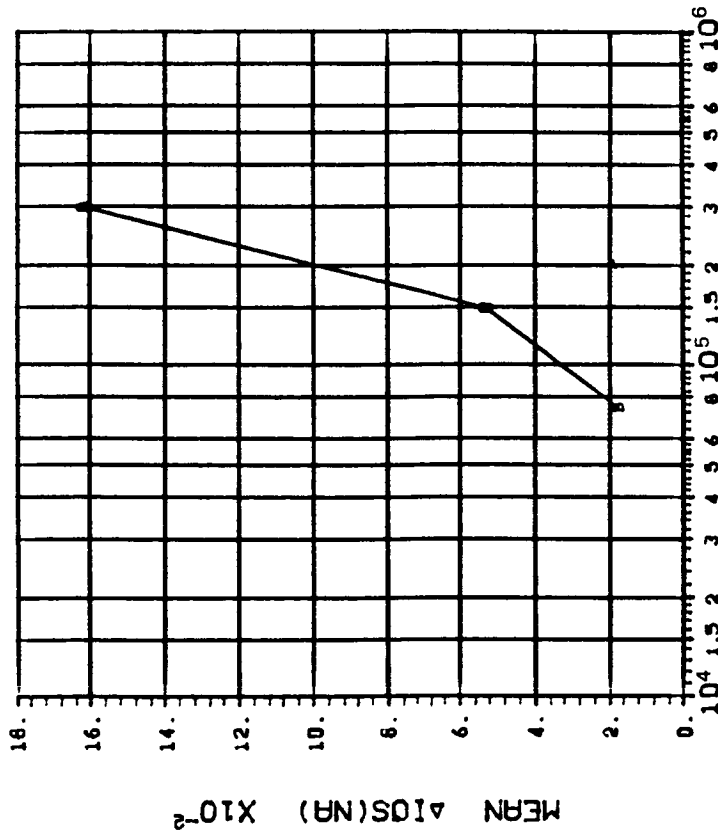
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.1300 .1091 .1095

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMJ 3 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0870-1 DATE CODE 8150



DOSE, rads(Si) Co ⁶⁰ Gammas

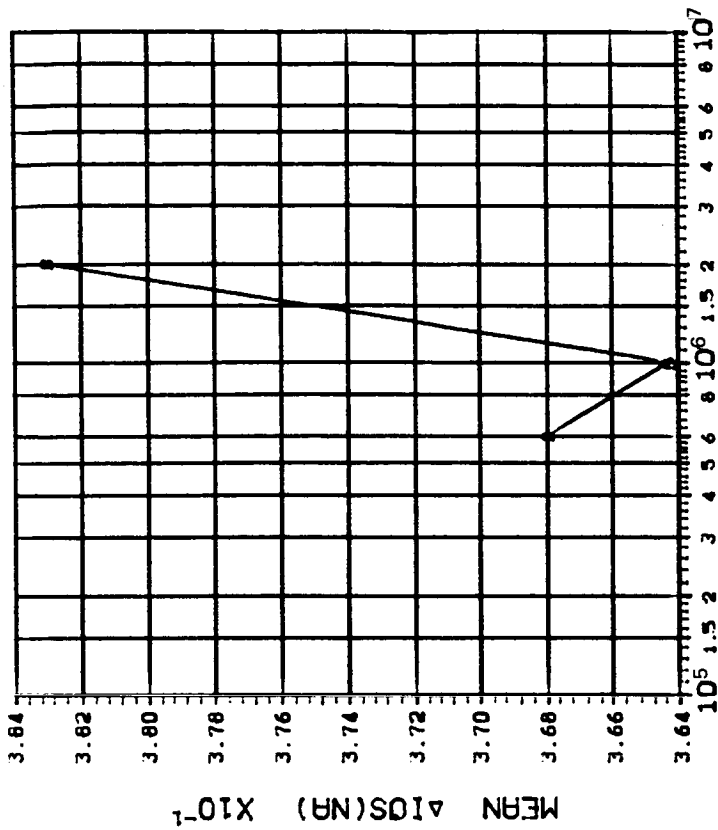
(2) $\Delta IOS(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75
	150
	300
B	.0236 .0761 .2090

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMJ 3 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0870-2 DATE CODE 8150

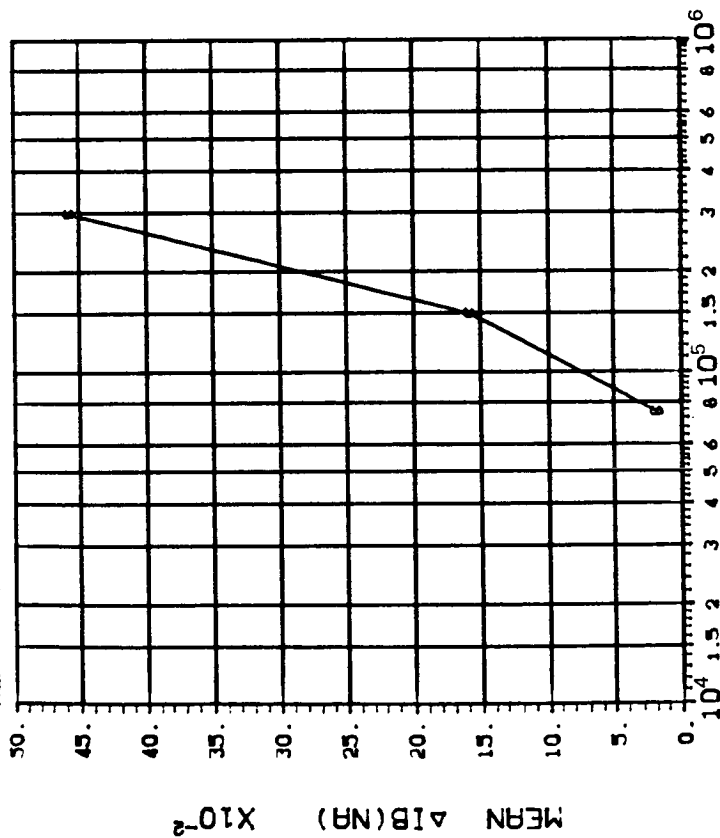


DOSE, rads(Si) Co ⁶⁰ Gammas

(2) $\Delta IOS(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600
	1000
	2000
B	.5079 .4592 .3835

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 3 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0870-1 DATE CODE 8150

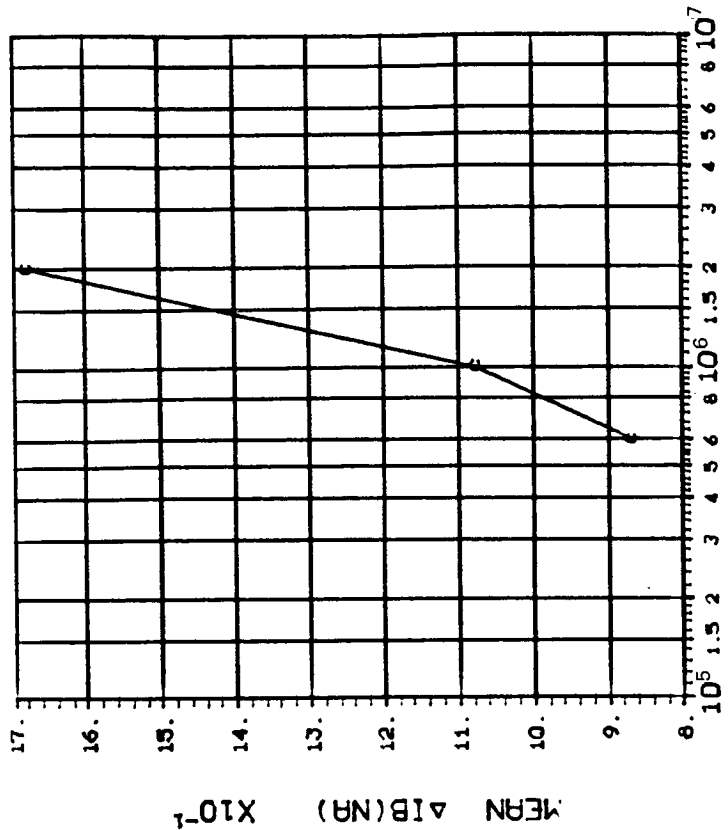


DOSE, rads(Si) Co 60 Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
.0630 .3306 .7175	

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 3 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0870-2 DATE CODE 8150



DOSE, rads(Si) Co 60 Gammas

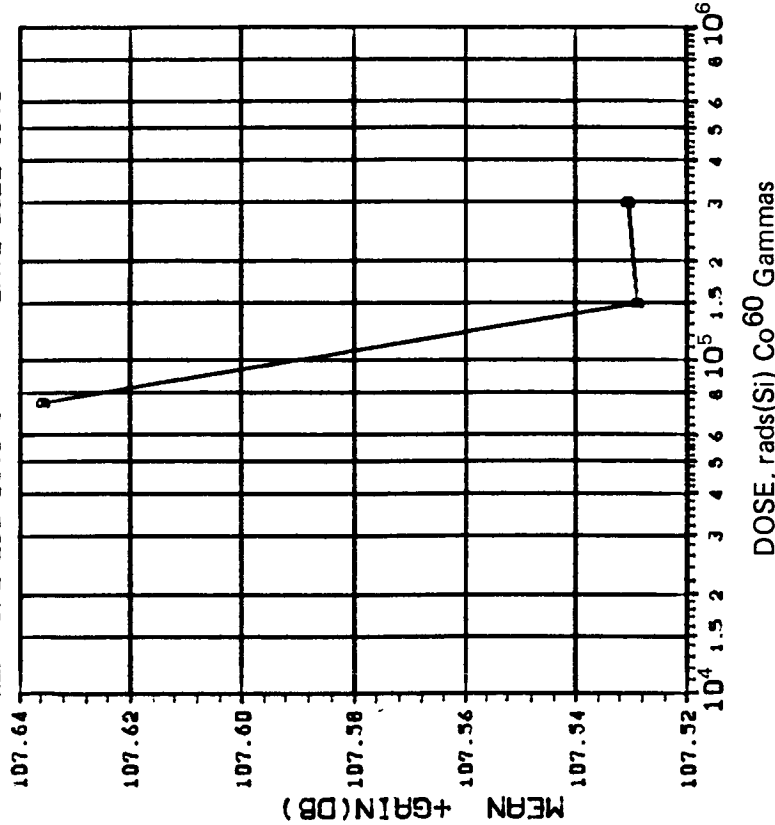
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600
	1000
	2000
1.177 1.212 1.339	

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 3 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0870-1 DATE CODE 8150



(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

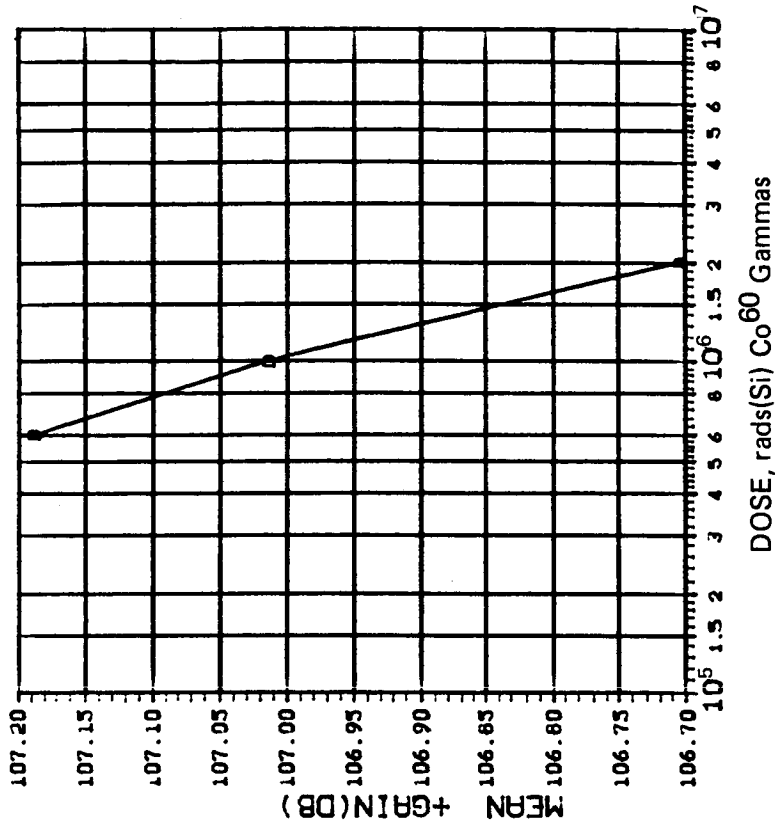
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	2.125 2.609 1.640

INITIAL MEAN VALUE +GAIN(DB) = 1.08X10¹²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 3 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0870-2 DATE CODE 8150



(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

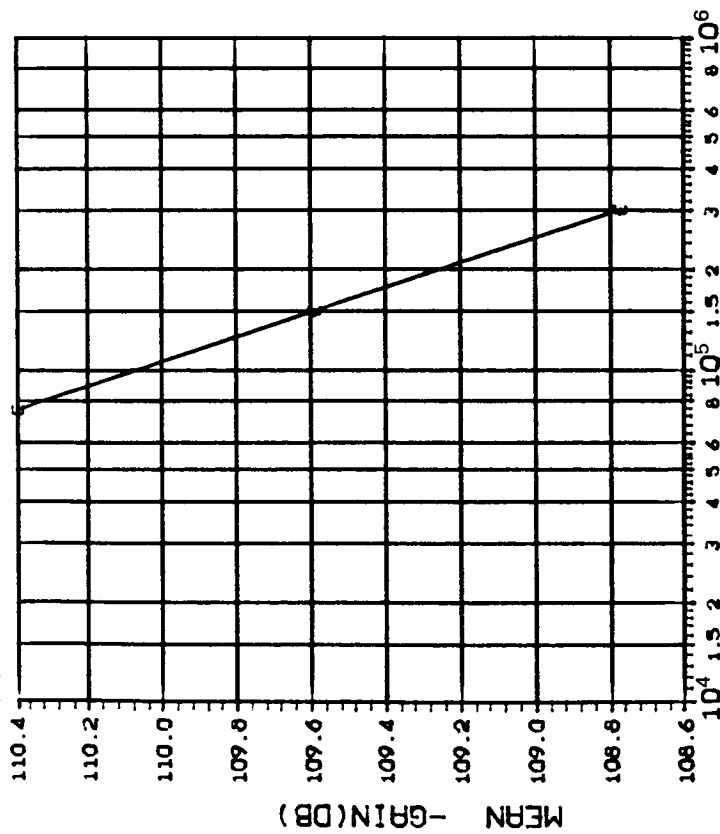
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	2.592 1.922 2.344

INITIAL MEAN VALUE +GAIN(DB) = 1.08X10¹²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 3 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0870-1 DATE CODE 8150



DOSE, rads(Si) Co 60 Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

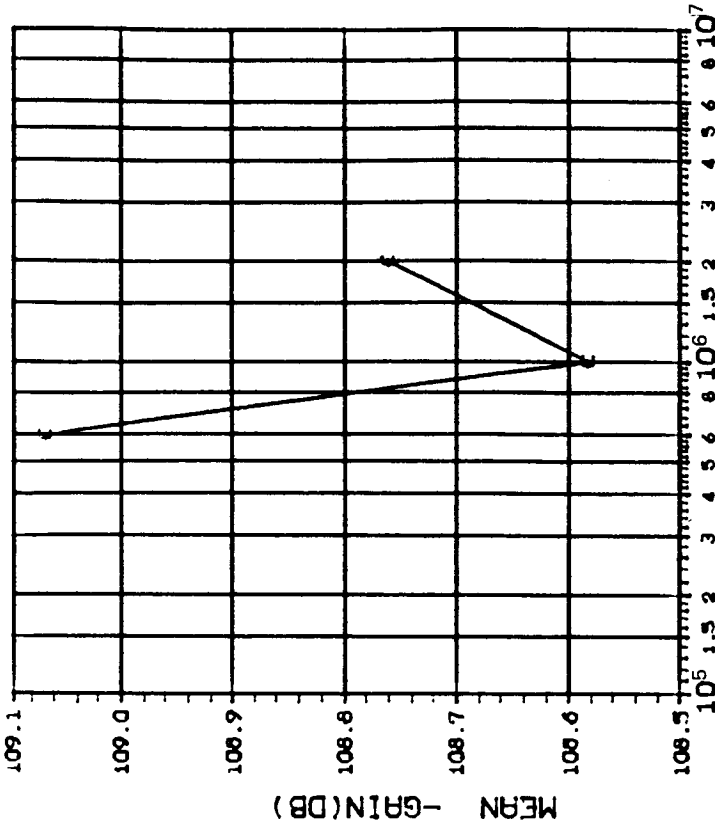
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300
		2.394 1.632 2.680

INITIAL MEAN VALUE -GAIN(DB) = 1.11X10⁺²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMI 3 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0870-2 DATE CODE 8150



DOSE, rads(Si) Co 60 Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

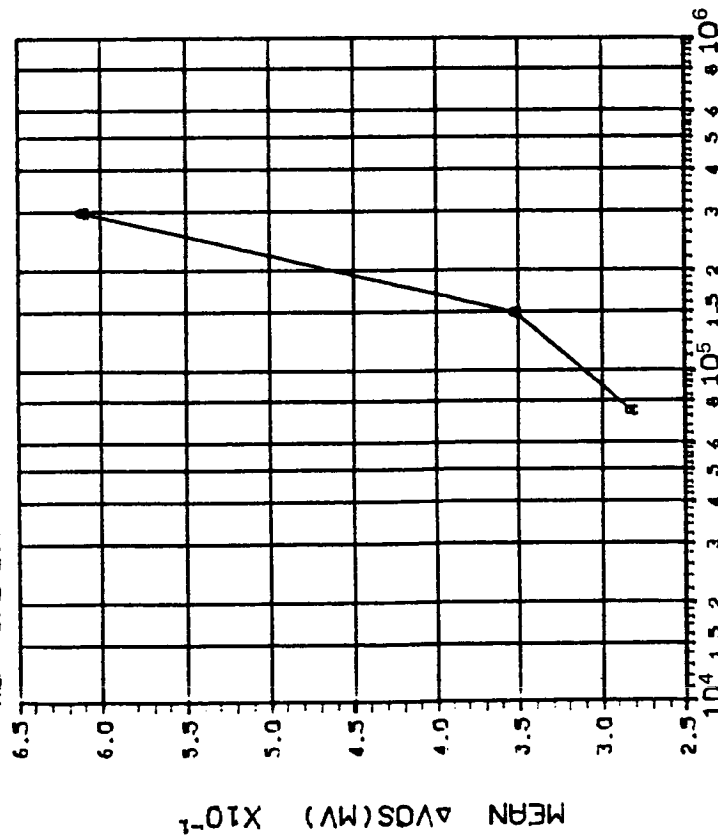
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	600 1000 2000
		2.216 2.516 2.260

INITIAL MEAN VALUE -GAIN(DB) = 1.11X10⁺²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMJ 4 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0871-1 DATE CODE 8150



DOSE, rad(Si) 2.5 MeV electrons

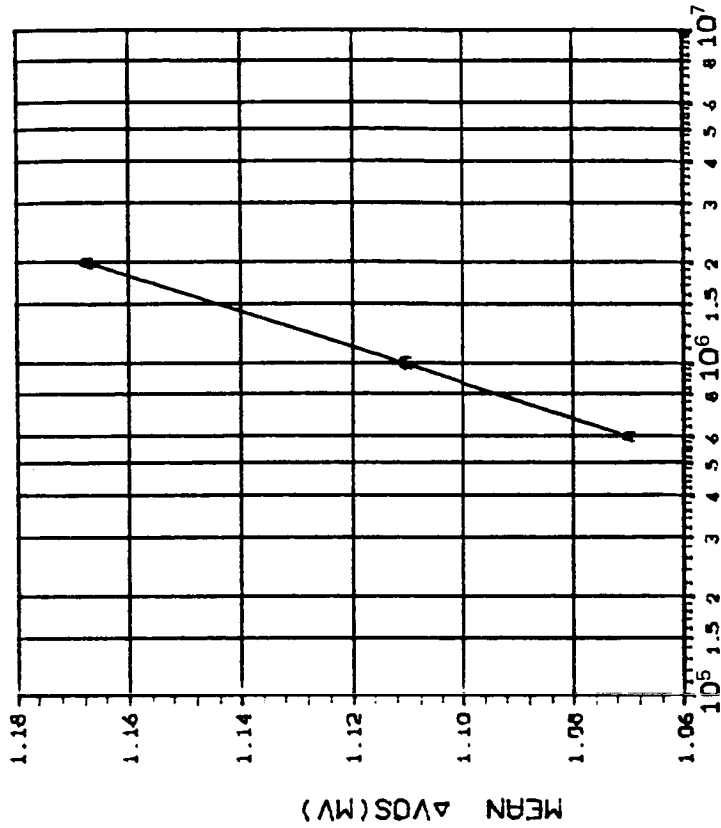
(1) ΔV_{OS} (MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.4530 .5425 .7679

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMJ 4 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0871-2 DATE CODE 8150

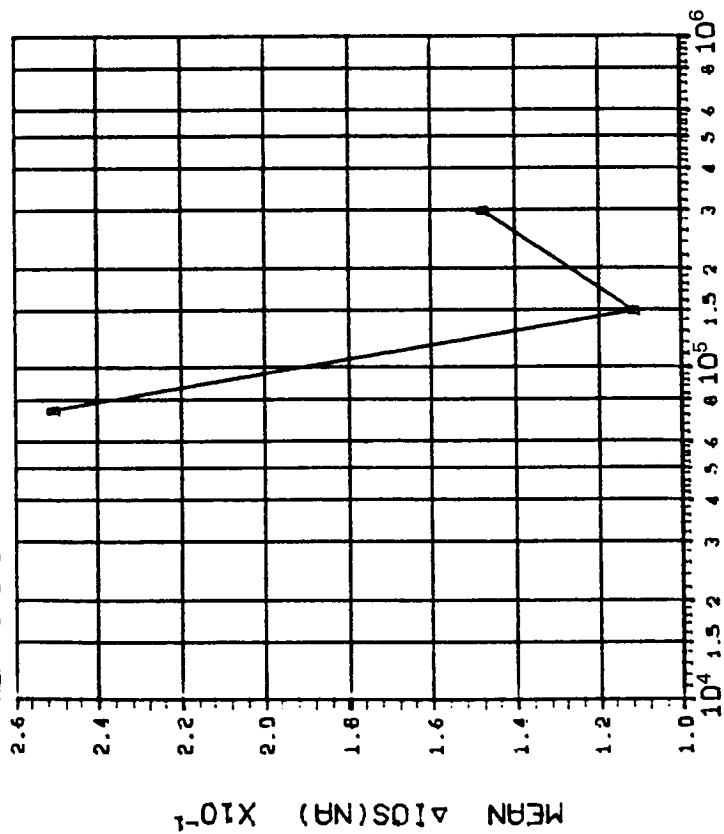


DOSE, rad(Si) 2.5 MeV electrons

(1) ΔV_{OS} (MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.9224 1.121 1.567

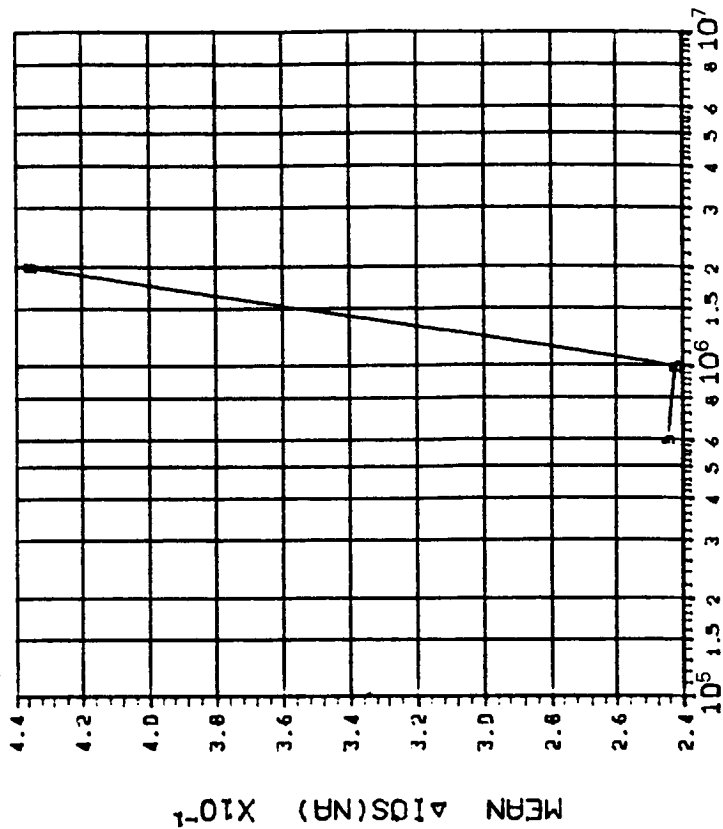
DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0871-1 DATE CODE 8130



DOSE, rads(Si) 2.5 MeV electrons
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
B	.4241	.0936 .0772

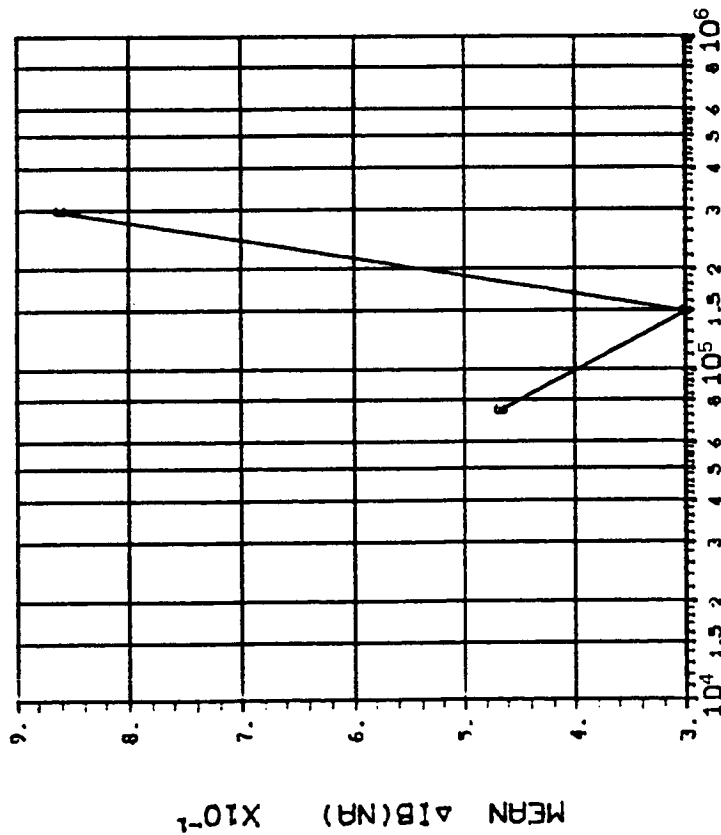
DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0871-2 DATE CODE 8130



DOSE, rads(Si) 2.5 MeV electrons
 (2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000 2000
B	.1932	.2763 .4061

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0871-1 DATE CODE 8150

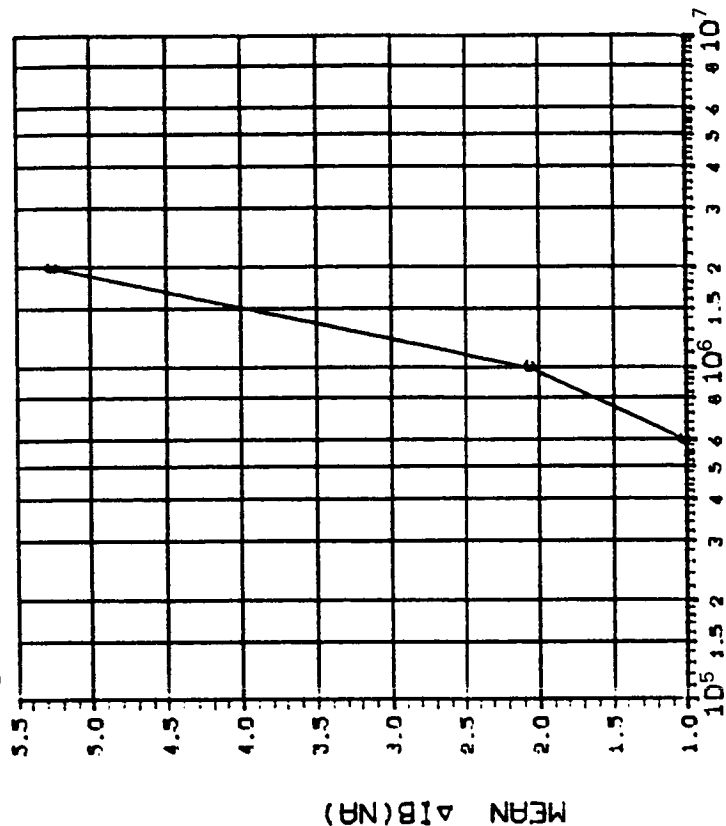


DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
C	.5767	.4063 .6209

DEVICE TYPE: OP-15 FET OP AMP
 MFG: PMI 4 DEVICES TEST DATE 10-19-82
 REF: JPL LOG 0871-2 DATE CODE 8150



DOSE, rads(Si) 2.5 MeV electrons

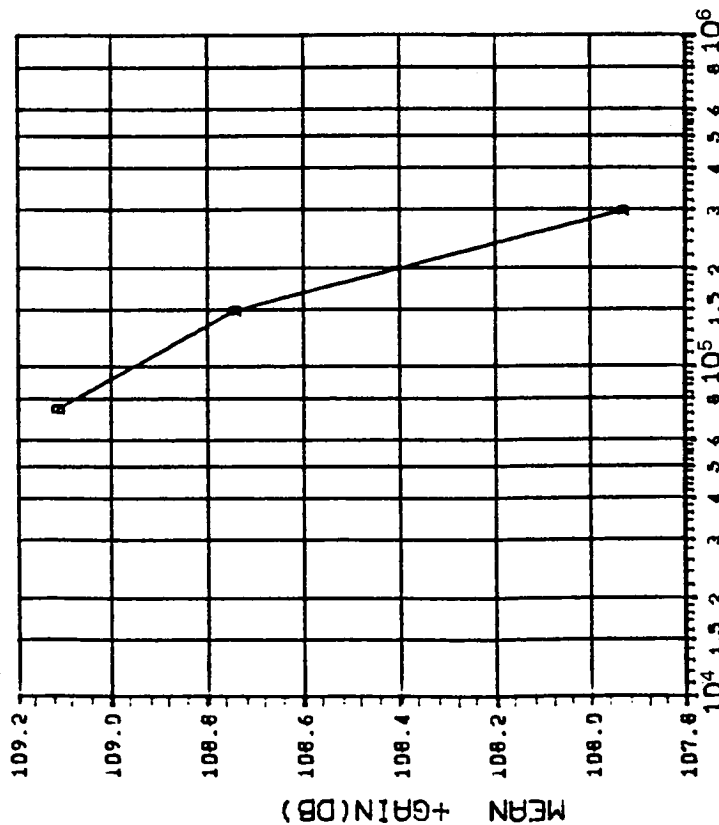
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000 2000
C	.5322	1.153 2.177

DEVICE TYPE: OP-15 FET OP AMP

MFG: PM1 4 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0871-1 DATE CODE 8150



DOSE, rads(Si) 2.5 MeV electrons

(41)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

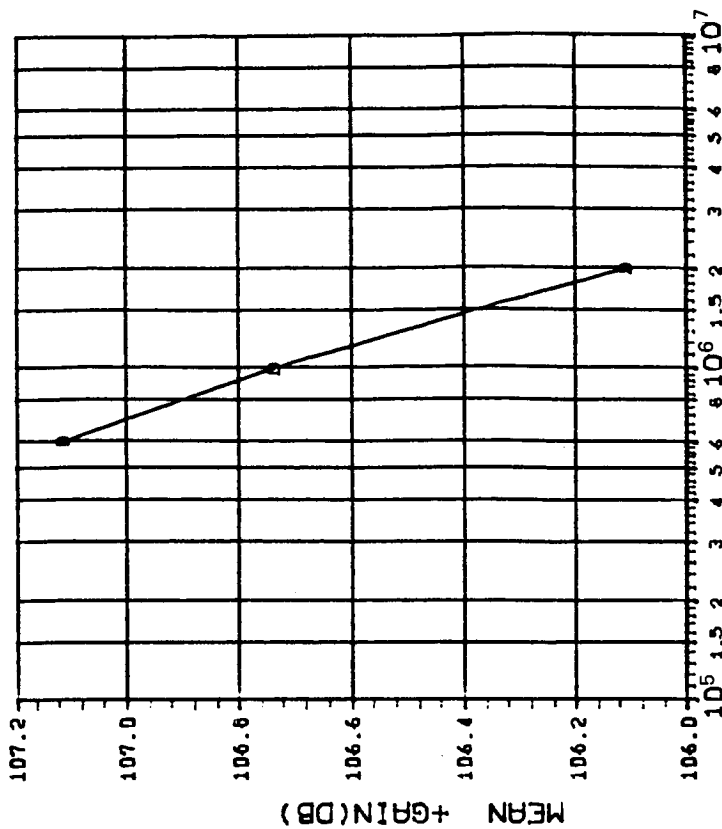
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I_L (mA)	DOSE, kilorads(Si)
D	5.00	75 150 300
		1.108 1.574 .7992

INITIAL MEAN VALUE +GAIN(DB) = 1.09×10^{12}

DEVICE TYPE: OP-15 FET OP AMP

MFG: PM1 4 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0871-2 DATE CODE 8150



DOSE, rads(Si) 2.5 MeV electrons

(41)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

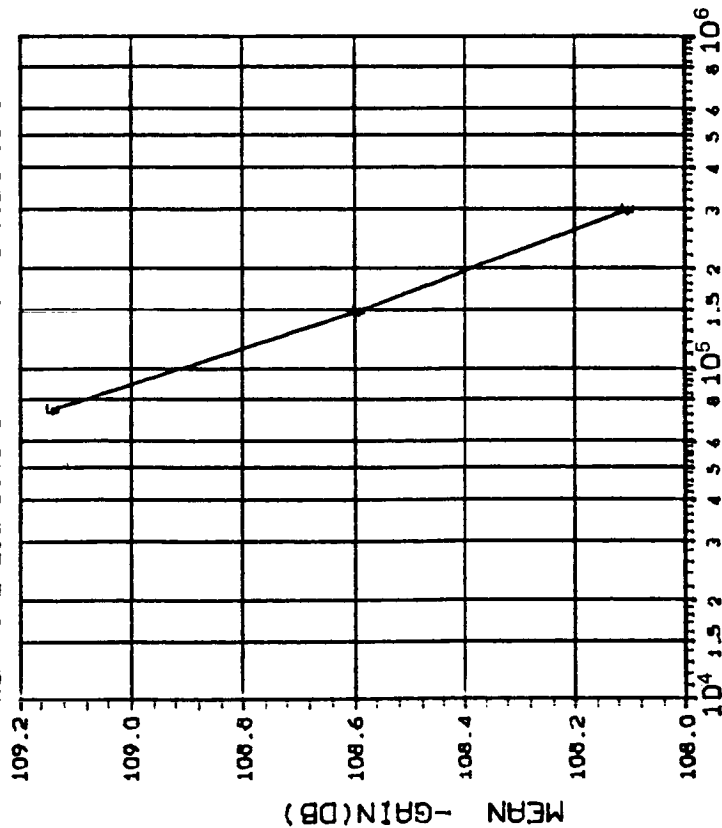
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I_L (mA)	DOSE, kilorads(Si)
D	5.00	600 1000 2000
		.8403 1.403 1.416

INITIAL MEAN VALUE +GAIN(DB) = 1.09×10^{12}

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMJ 4 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0871-1 DATE CODE 8150



DOSE, rad(Si) 2.5 MeV electrons

(51)-GAIN IN DB(5.MA LOAD, -10V): VS DOSE

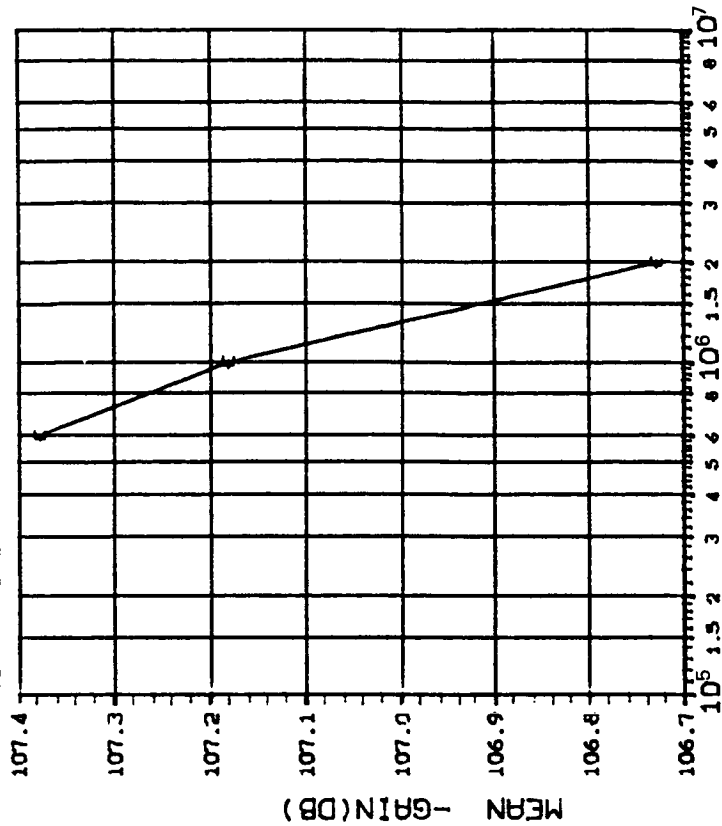
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300
E	5.00	1.410 1.326 .9139

INITIAL MEAN VALUE -GAIN(DB) = 1.11X10¹²

DEVICE TYPE: OP-15 FET OP AMP

MFG: PMJ 4 DEVICES TEST DATE 10-19-82

REF: JPL LOG 0871-2 DATE CODE 8150



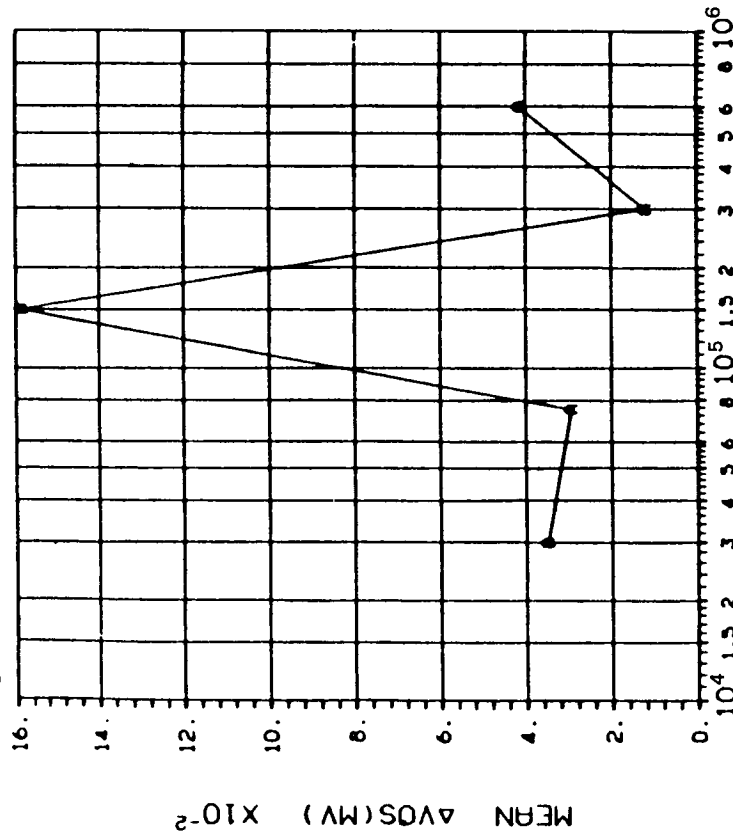
DOSE, rad(Si) 2.5 MeV electrons

(51)-GAIN IN DB(5.MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	600 1000 2000
E	5.00	1.024 1.088 .6336

INITIAL MEAN VALUE -GAIN(DB) = 1.11X10¹²

DEVICE TYPE: OP-16 FET OP AMP
MFG: PMI 5 DEVICES TEST DATE 9-16-81
REF: JPL LOG 0784 DATE CODE 8128

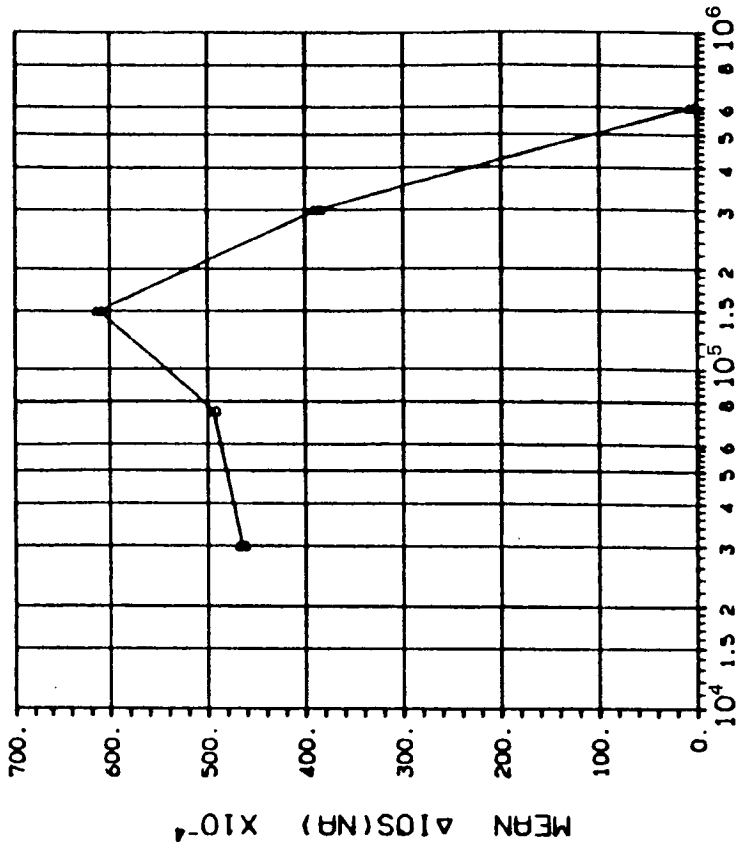


DOSE, rads(Si) 2.5 MeV electrons

(1) $\Delta VOS(MV)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	30
	75
	150
	300
A	600
	.0811
	.0727
	.1384
A	.0731
	.0541

DEVICE TYPE: OP-16 FET OP AMP
MFG: PMI 5 DEVICES TEST DATE 9-16-81
REF: JPL LOG 0784 DATE CODE 8128

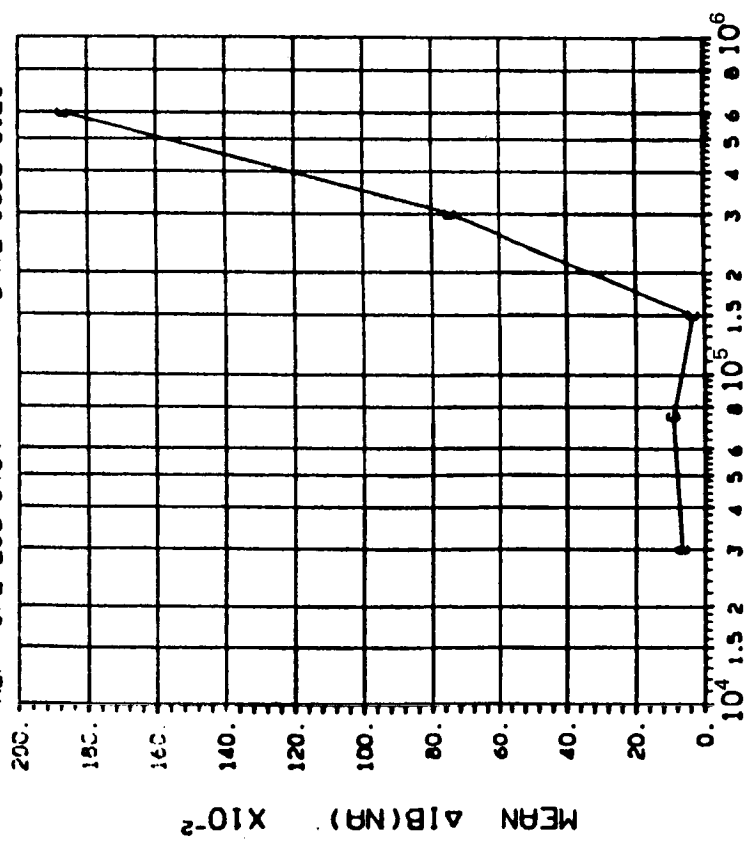


DOSE, rads(Si) 2.5 MeV electrons

(2) $\Delta IOS(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	30
	75
	150
	300
B	600
	.0566
	.0817
	.0819
B	.1723
	.2799

DEVICE TYPE: OP-16 FET OP AMP
 MFG: PMI 5 DEVICES TEST DATE 9-16-81
 REF: JPL LOG 0784 DATE CODE 8128

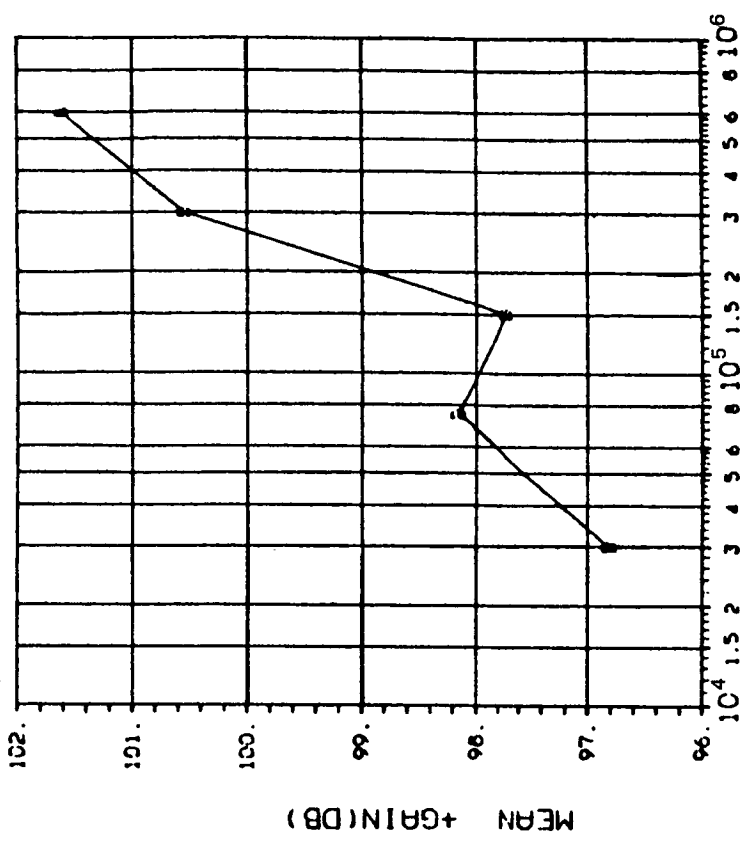


DOSE, rads(Si) 2.5 MeV electrons

(3) ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	30
	75
	150
	300
C	600
	1.838
	2.271
	2.815

DEVICE TYPE: OP-16 FET OP AMP
 MFG: PMI 5 DEVICES TEST DATE 9-16-81
 REF: JPL LOG 0784 DATE CODE 8128



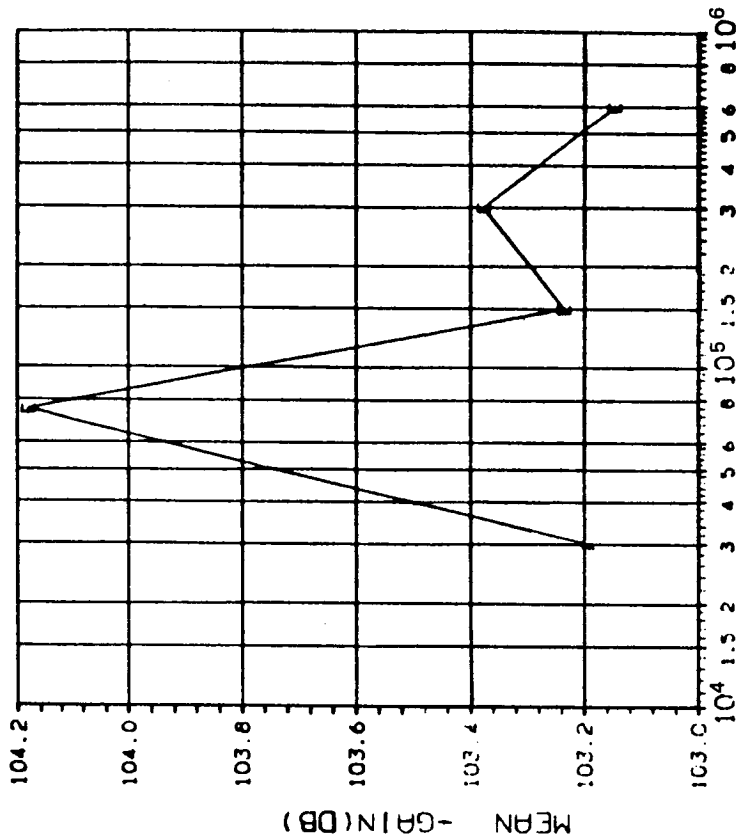
DOSE, rads(Si) 2.5 MeV electrons

(4) +GAIN IN DB (5K LOAD) = 1.0MA. +15V VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
D	30
	75
	150
	300
D	600
	1.838
	2.271
	2.815

INITIAL MEAN VALUE +GAIN(DB) = 9.57 x 10⁺¹

DEVICE TYPE: OP-16 FET OP AMP
 MFG: PMI 5 DEVICES TEST DATE 9-16-81
 REF: JPL LOG 0784 DATE CODE 8128



DOSE, rads(Si) 2.5 MeV electrons

(5) -GAIN IN DB (5K LOAD=1.0MA, -15V VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS				
CURVE	I _L (mA)	DOSE, kilorads(Si)		
		30	75	150
E	5.00	1.800	2.767	2.544
		2.674	2.931	

INITIAL MEAN VALUE -GAIN(DB) = 1.02x10⁻²

DEVICE TYPE: OP-21 OP AMP

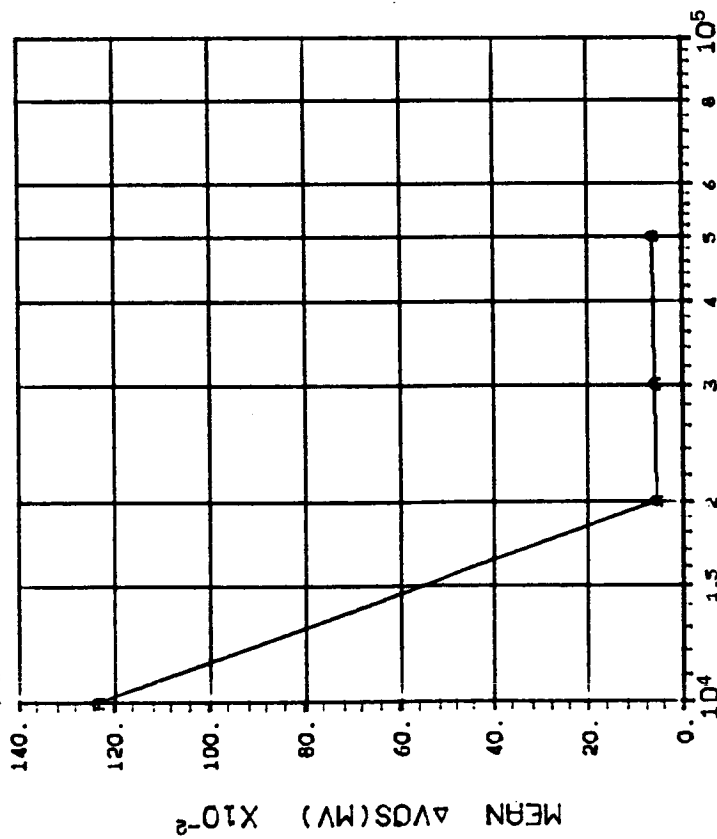
MFG: PMI

4 DEVICES

TEST DATE 03-24-83

REF: JPL LOG 0860-1

DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	10	20 30 50
A	1.102	.0531 .0486 .0420

DEVICE TYPE: OP-21 OP AMP

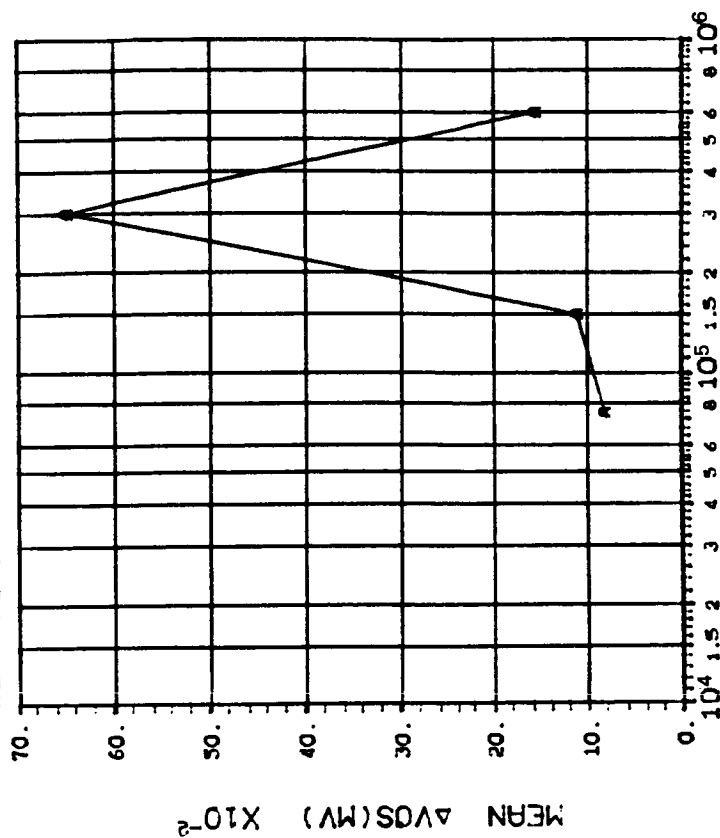
MFG: PMI

4 DEVICES

TEST DATE 03-24-83

REF: JPL LOG 0860-2

DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

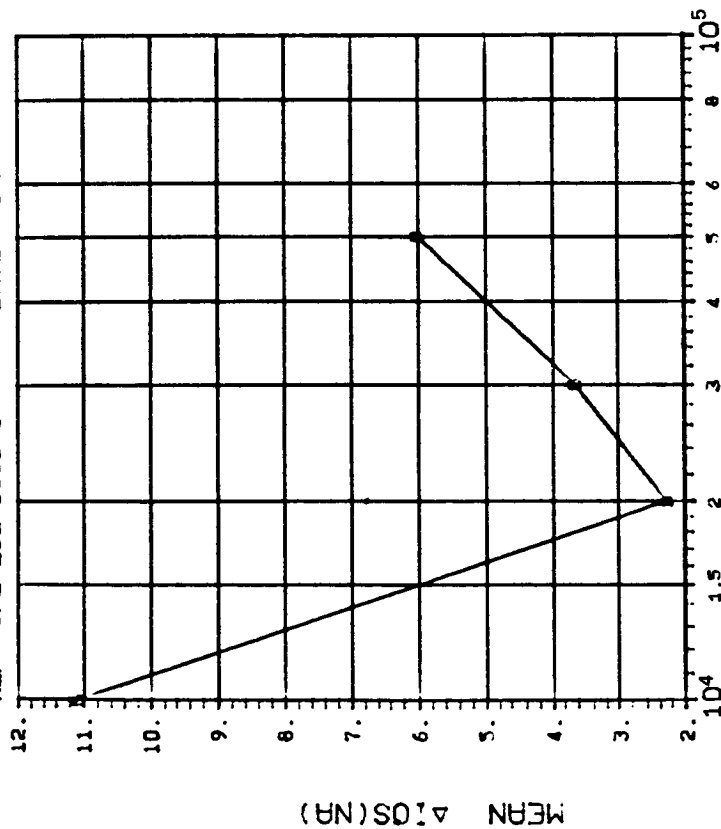
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600
A	.0467	.0742 .9600 .0916

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0860-1 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

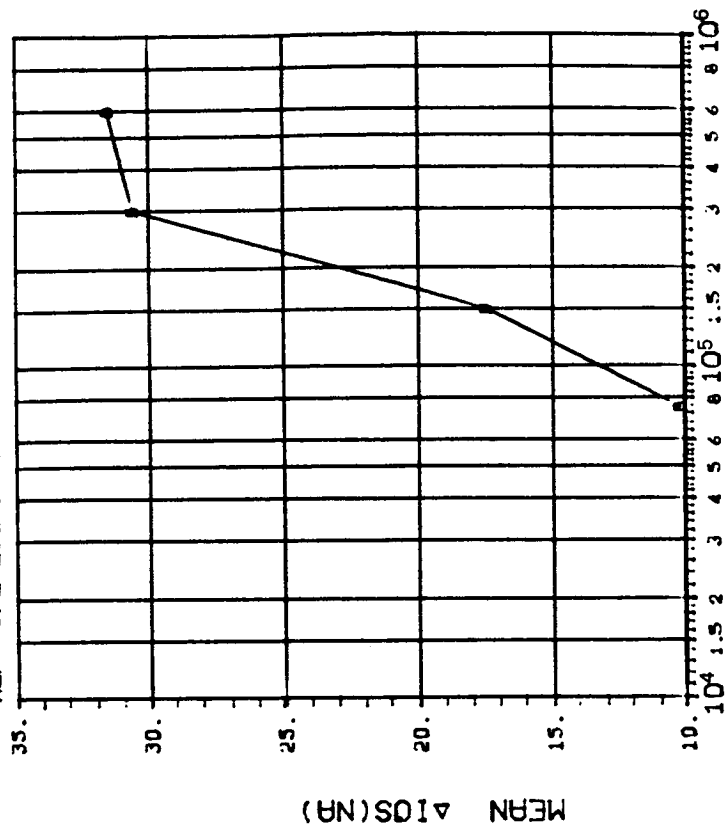
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
	10 20 30 50
B	10.72 2.043 3.014 5.263

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0860-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
	75 150 300 600
B	9.127 17.26 23.08 24.51

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83
REF: JPL LOG 0860-1 DATE CODE 8229



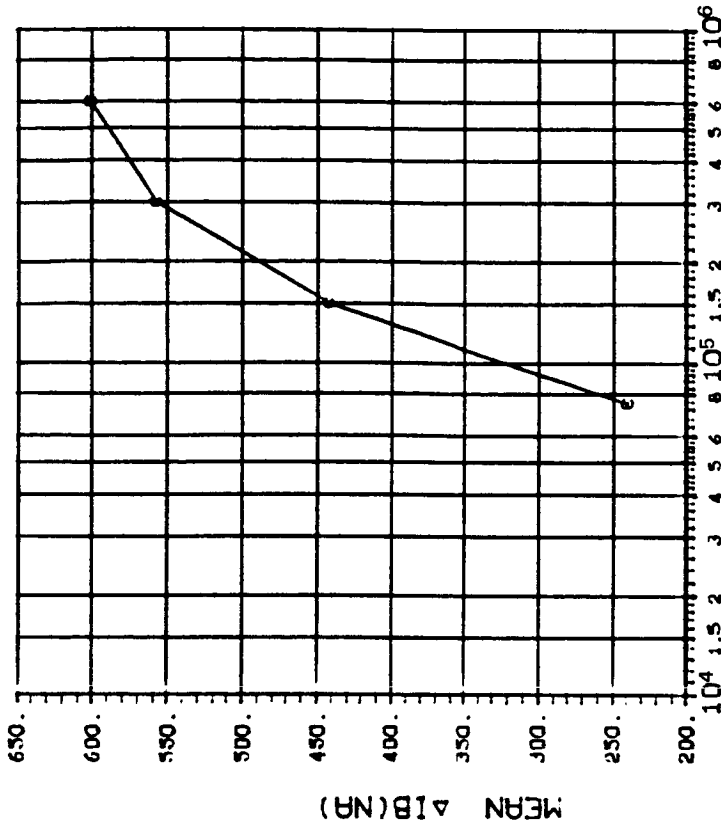
DOSE, rads(Si) 2.5 MeV electrons

(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	10
	20
	30
34.65 45.52 26.06 26.82	

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83
REF: JPL LOG 0860-2 DATE CODE 8229

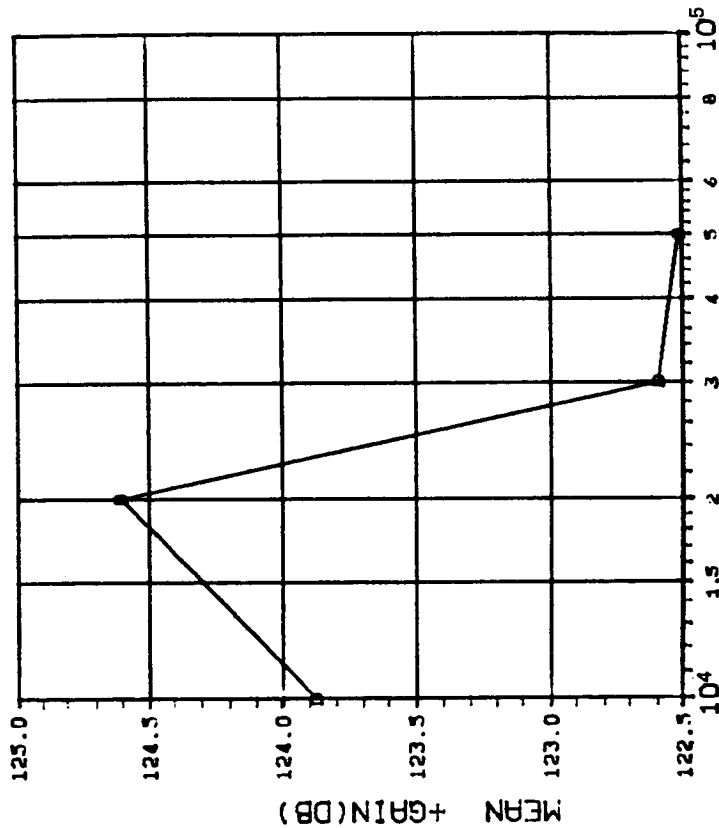


DOSE, rads(Si) 2.5 MeV electrons

(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
117.3 88.88 16.10 19.24	

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0860-1 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons
 (4)+GAIN IN DB(1.MA LOAD,+10V): VS DOSE

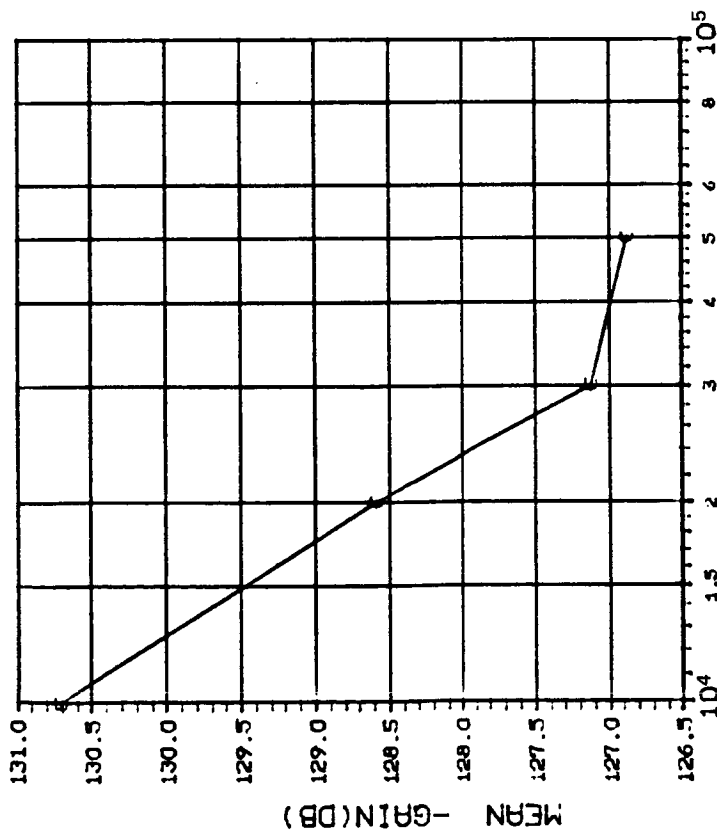
TABLE OF NORMAL STANDARD DEVIATIONS				
CURVE	I_L (mA)	DOSE, kilorads(Si)		
		10	20	30
D	1.00	1.756	1.928	1.516
				.6696

INITIAL MEAN VALUE +GAIN(DB) = $1.25 \times 10^{+2}$

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0860-1 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(1.MA LOAD, -10V) : VS DOSE

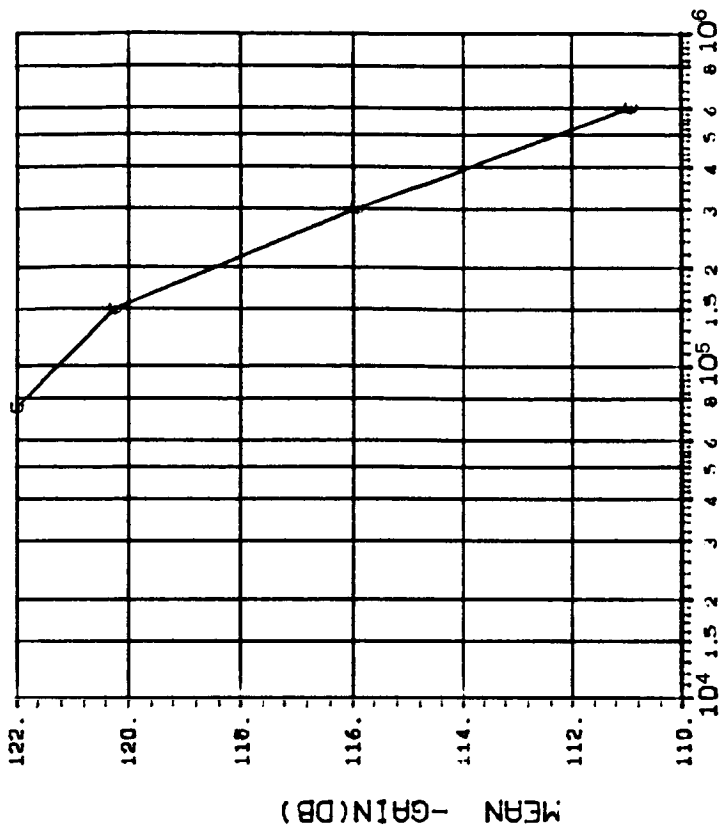
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	10 20 30 50
		2.476 1.249 2.218 3.109

INITIAL MEAN VALUE -GAIN(DB) = 1.30X10¹²

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0860-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(1.MA LOAD, -10V) : VS DOSE

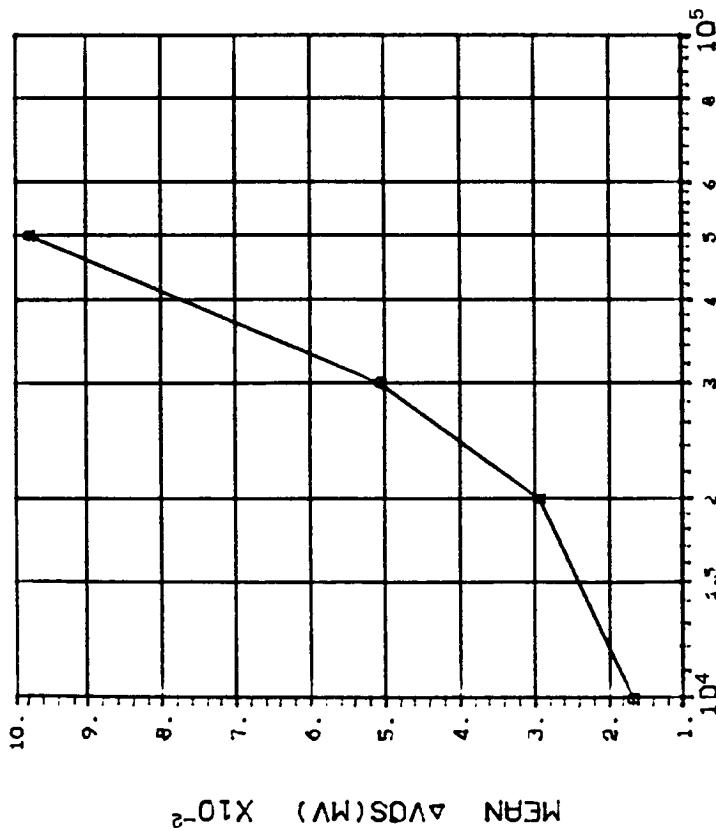
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	75 150 300 600
		.8920 .4576 3.076 .9523

INITIAL MEAN VALUE -GAIN(DB) = 1.30X10¹²

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0862-1 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

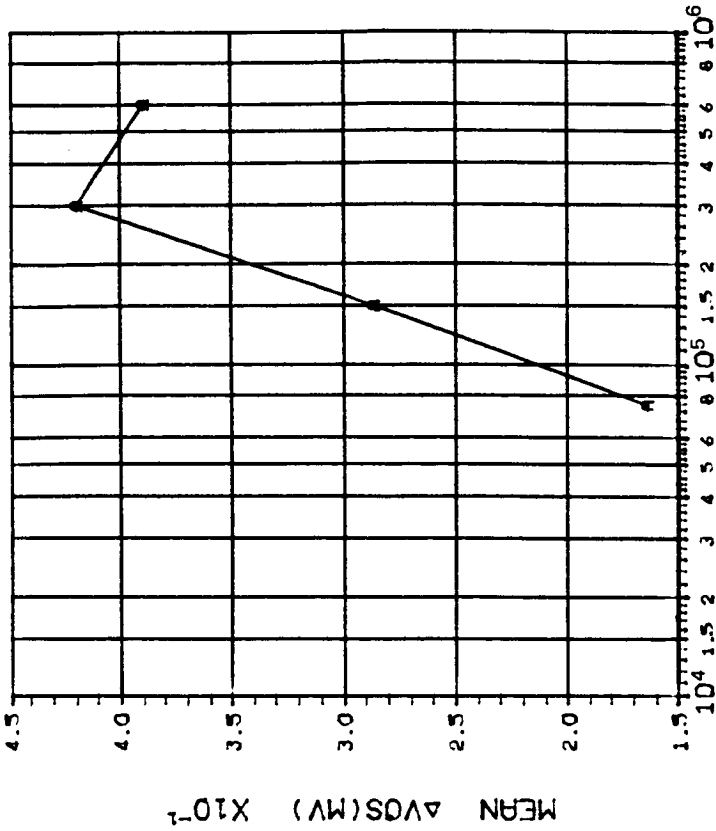
(1) $\Delta V_{OS}(MV)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	10	20
A	.0168	.0275
	30	50
	.0440	.0817

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0862-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

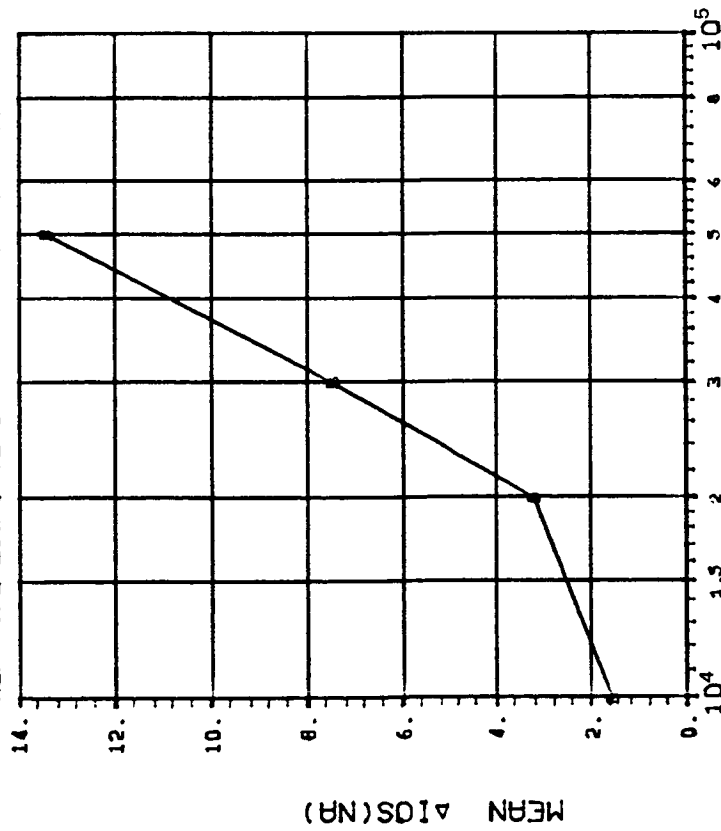
(1) $\Delta V_{OS}(MV)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
A	.1440	.2494
	300	600
	.3762	.3221

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0862-1 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

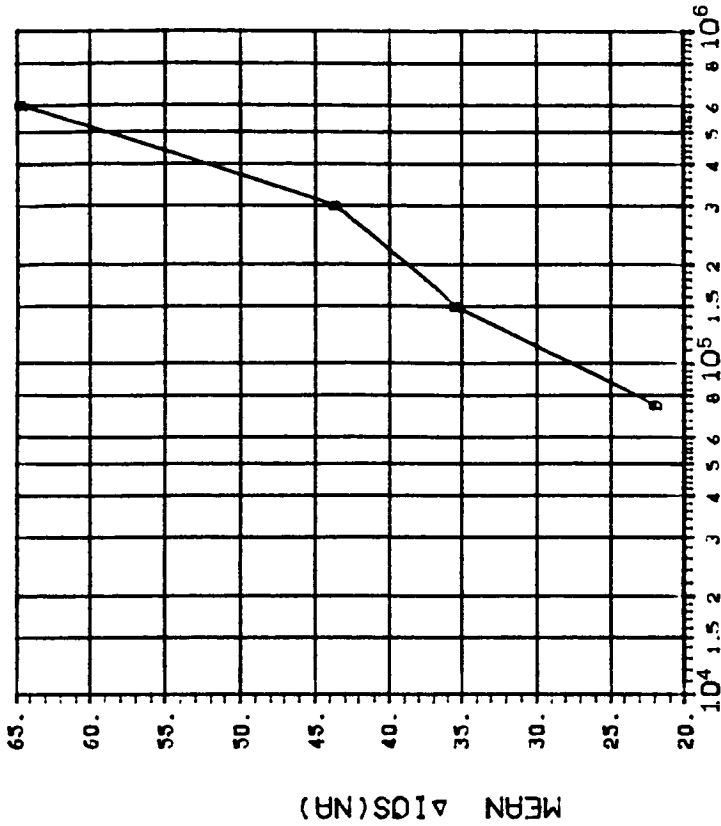
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	10	20 30 50
B	.6990	1.736 5.079 9.765

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0862-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

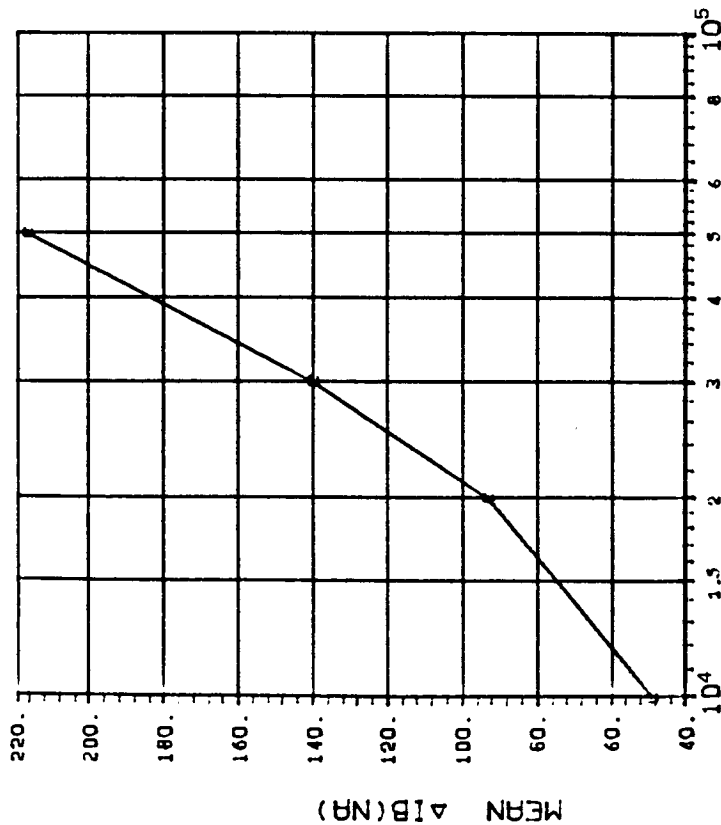
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600
B	17.48	29.47 30.12 61.33

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0862-1 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

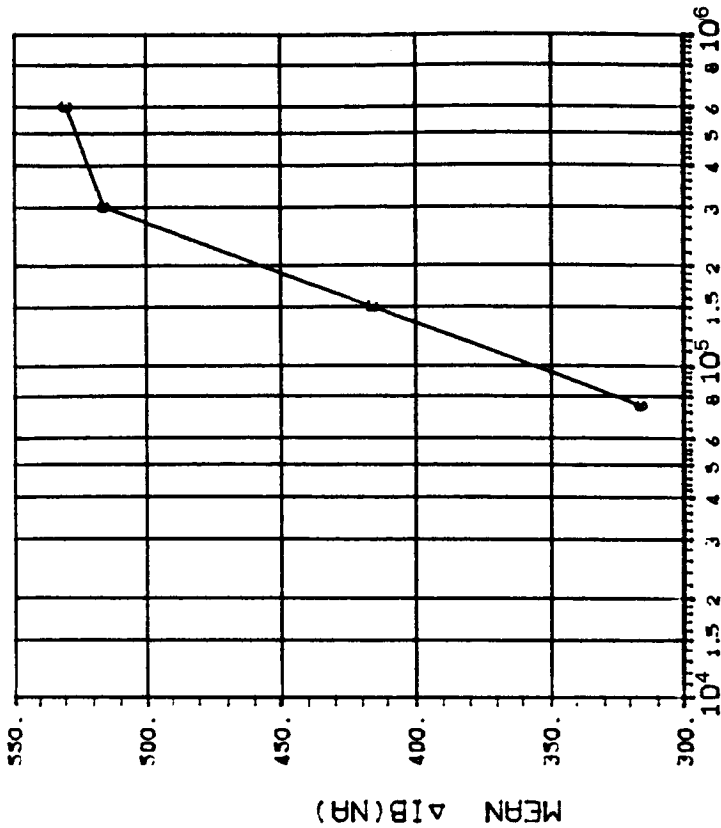
(3) Δ IB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	10	20 30 50
C	10.19	21.08 37.78 79.10

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 4 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0862-2 DATE CODE 8229

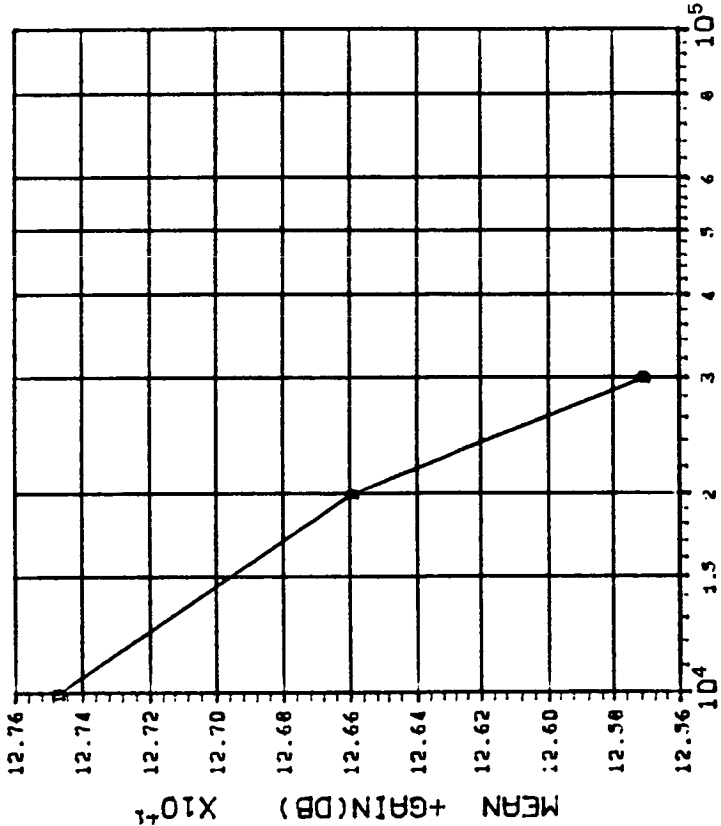


DOSE, rads(Si) 2.5 MeV electrons

(3) Δ IB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600
C	150.7	118.1 52.62 189.8

DEVICE TYPE: OP-21 OP AMP
 MFG: PM1 4 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0862-1 DATE CODE 8229

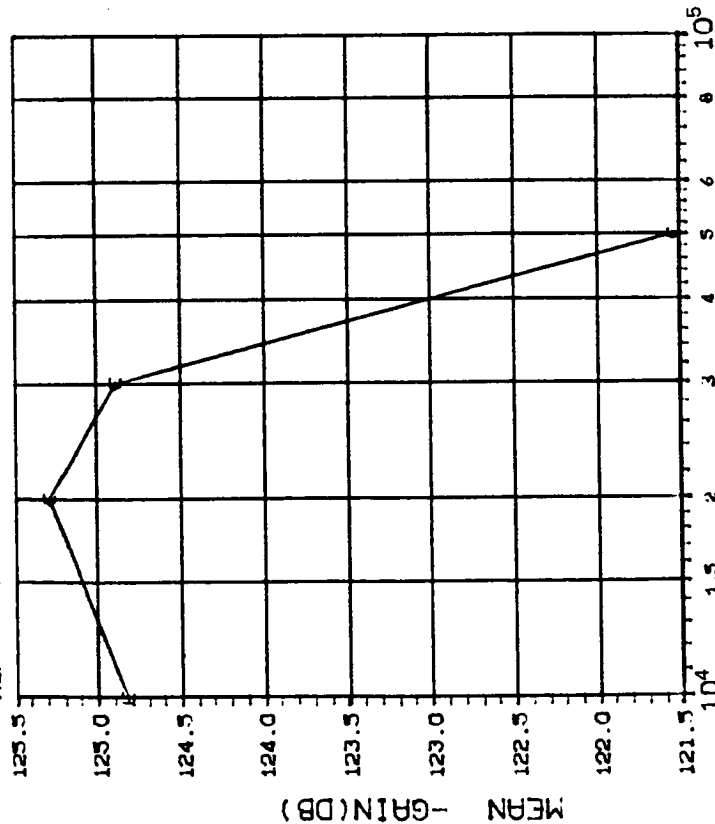


DOSE, rads(Si) 2.5 MeV electrons
 (41+GAIN IN DB(1.MA LOAD, +10V1: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	I _L (mA)	DOSE, kilorads(Si)	
D	1.00	10	30
		.9691	3.327 *****

INITIAL MEAN VALUE +GAIN(DB1) = 1.24X10¹²

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0862-1 DATE CODE 8229



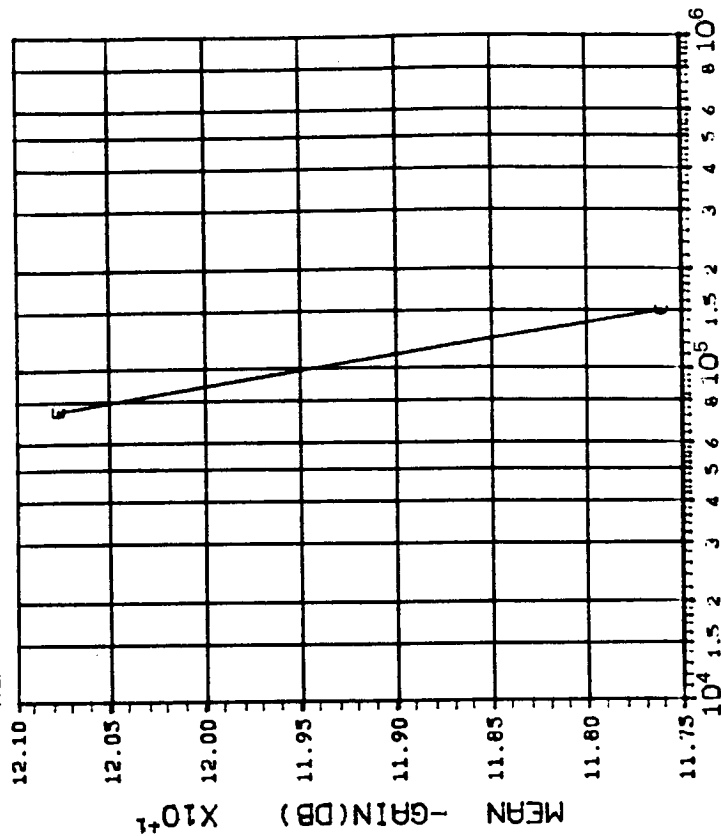
DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(1.MA LOAD, -10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	10 20 30 50
		.7916 1.461 1.411 1.668

INITIAL MEAN VALUE -GAIN(DB) = 1.27X10¹²

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 4 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0862-2 DATE CODE 8229



DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(1.MA LOAD, -10V) : VS DOSE

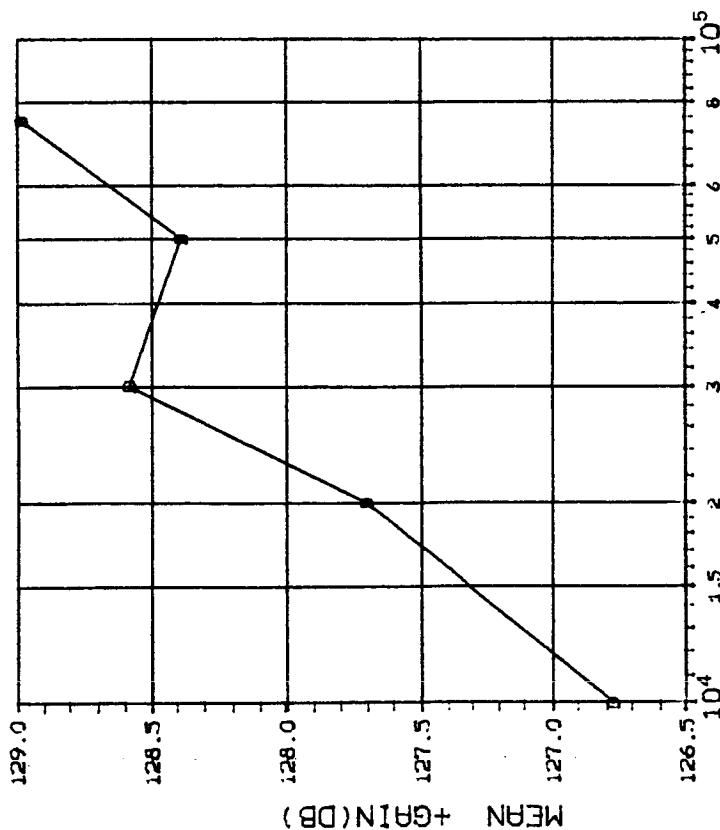
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	75 150 300 600
		1.399 3.790 *****

INITIAL MEAN VALUE -GAIN(DB) = 1.27X10¹²

DEVICE TYPE: OP-21 OP AMP

MFG: PMJ 4 DEVICES TEST DATE 03-21-83

REF: JPL LOG 0863 DATE CODE 8229



DOSE, rads(Si) Co 60 Gammas

(4)+GAIN IN DB(1.MA LOAD, +10V) : VS DOSE

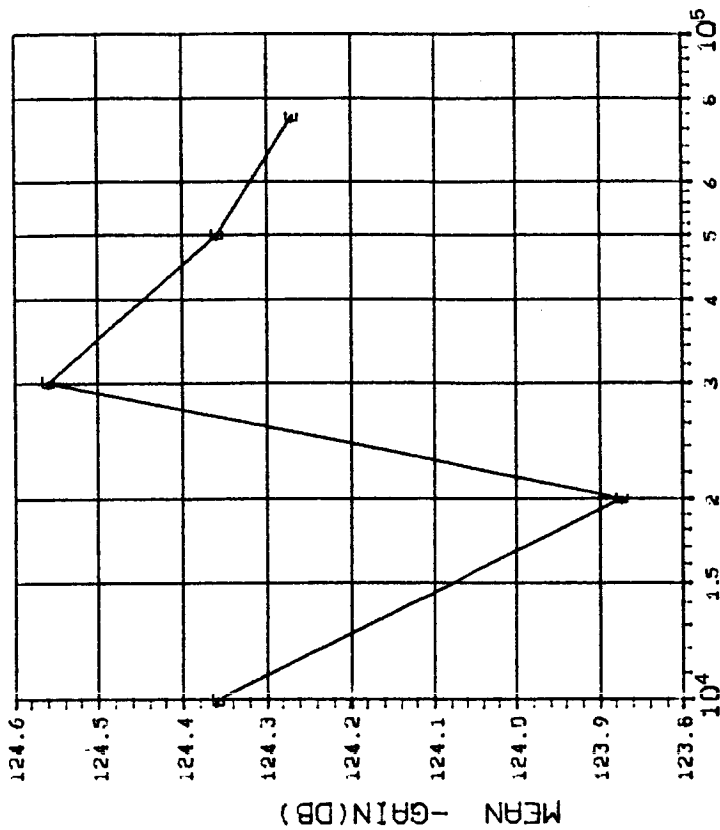
TABLE OF NORMAL STANDARD DEVIATIONS						
CURVE		I _L (mA)	DOSE, kilorads(Si)			
			10	20	30	50
D		1.00	4.249	5.342	3.962	4.801
			3.456			

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10⁺²

DEVICE TYPE: OP-21 OP AMP

MFG: PMJ 4 DEVICES TEST DATE 03-21-83

REF: JPL LOG 0863 DATE CODE 8229



DOSE, rads(Si) Co 60 Gammas

(5)-GAIN IN DB(1.MA LOAD, -10V) : VS DOSE

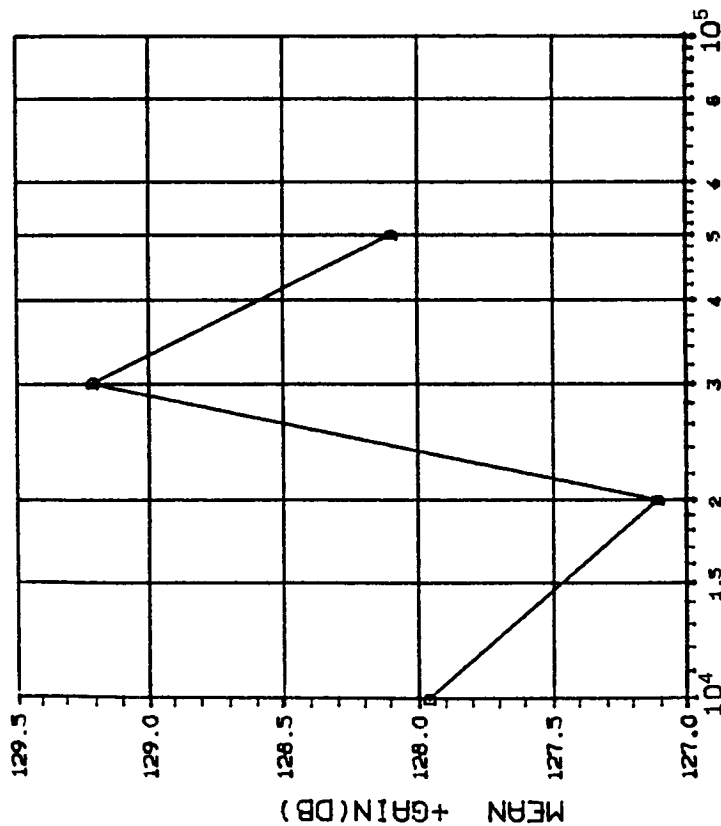
TABLE OF NORMAL STANDARD DEVIATIONS						
CURVE	I _L (mA)	DOSE, kilorads(Si)				
		10	20	30	50	75
E	1.00	2.609	1.758	1.687	2.609	2.077

INITIAL MEAN VALUE -GAIN(DB) = 1.25X10⁺²

DEVICE TYPE: OP-21 OP AMP

MFG: PM1 4 DEVICES TEST DATE 03-22-83

REF: JPL LOG 0998-1 DATE CODE 8229



DOSE, rads(Si) Co⁶⁰ Gammas

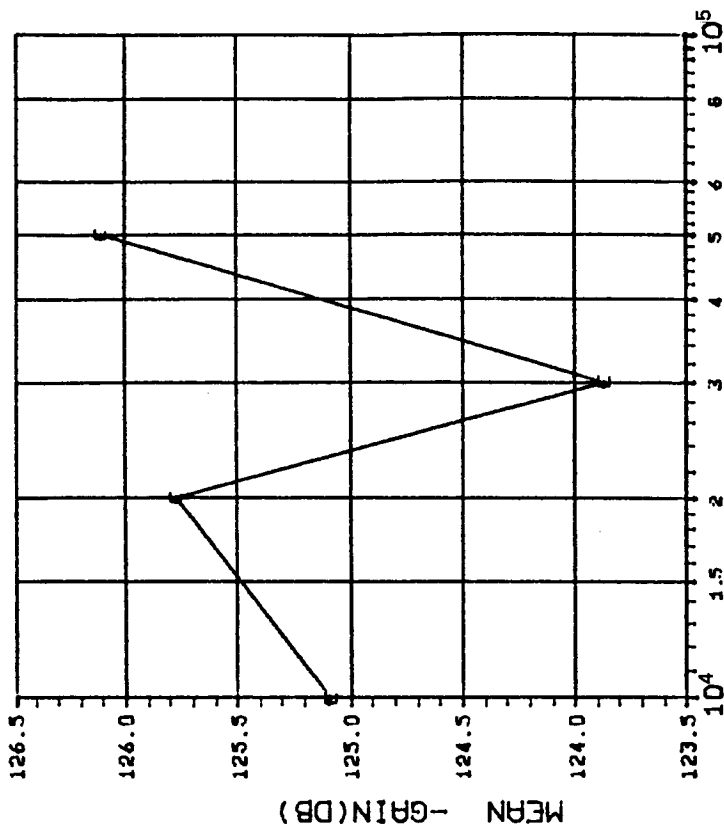
(4)+GAIN IN DB(1.MA LOAD,+10V): VS DOSE

INITIAL MEAN VALUE +GAIN(DB) = 1.24X10⁺²

DEVICE TYPE: OP-21 OP AMP

MFG: PM1 4 DEVICES TEST DATE 03-22-83

REF: JPL LOG 0998-1 DATE CODE 8229



DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(1.MA LOAD,-10V): VS DOSE

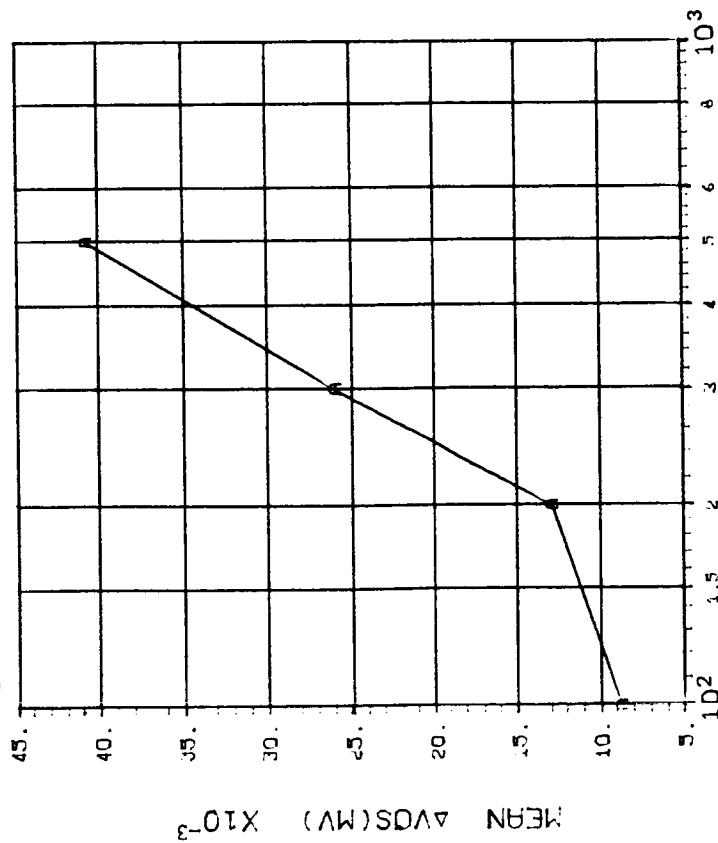
TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	I _L (mA)	DOSE, kilorads(Si)	
		10	30
E	1.00	2.547	2.005
		1.756	3.480

INITIAL MEAN VALUE -GAIN(DB) = 1.28X10⁺²

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 6-28-83

REF: JPL LOG 1013-1 DATE CODE 8311



DOSE, rads(Si) Co 60 Gammas

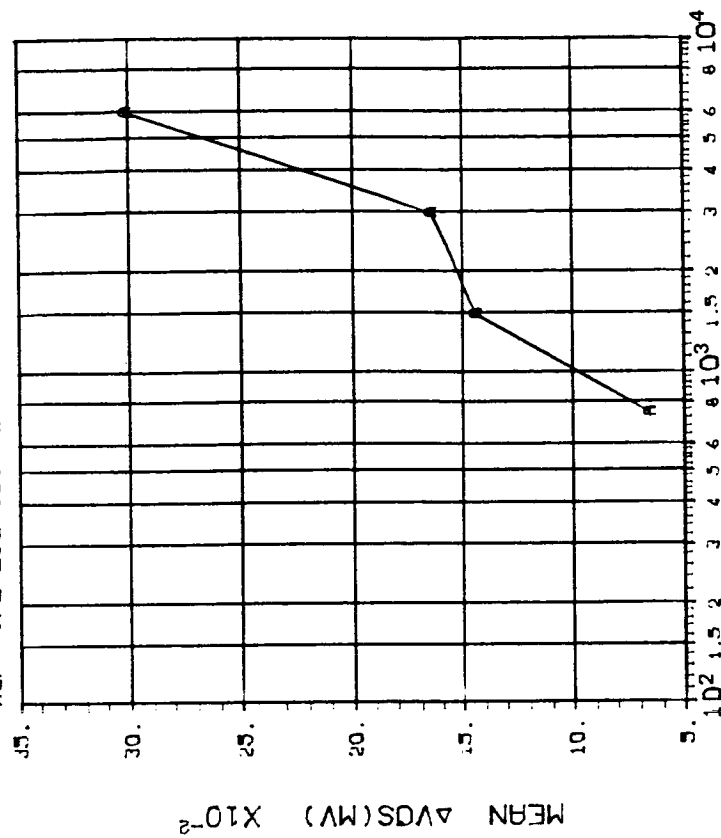
(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	0.1
	0.2
	0.3
	0.5
.0069 .0125 .0210 .0376	

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 6-28-83

REF: JPL LOG 1013-2 DATE CODE 8311



DOSE, rads(Si) Co 60 Gammas

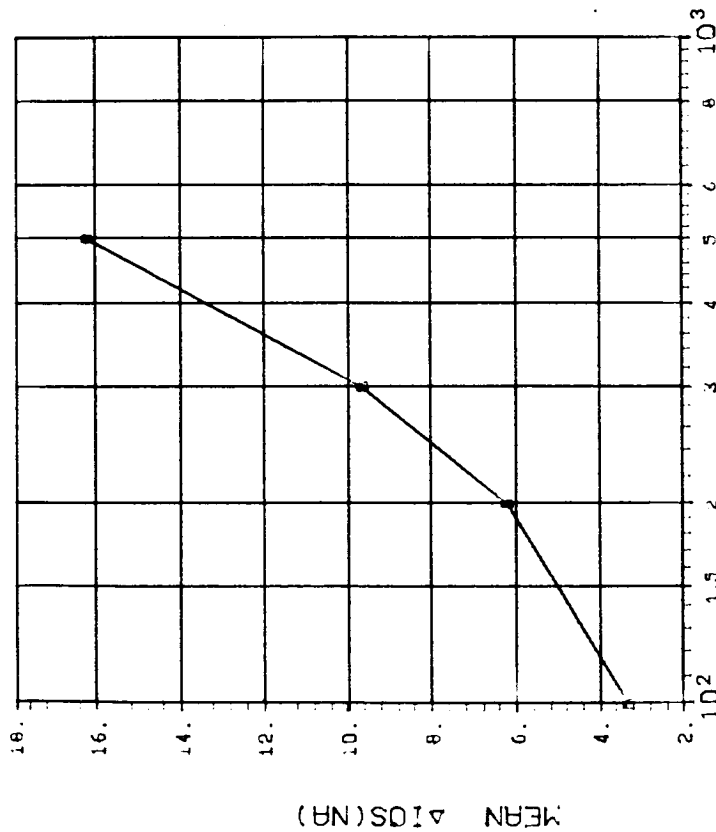
(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	.75
	1.5
	3
	6
.0623 .1090 .1236 .2756	

DEVICE TYPE: OP-21 OP AMP

MFG: PMJ 5 DEVICES TEST DATE 6-28-83

REF: JPL LOG 1015-1 DATE CODE 8311



DOSE, rads(Si) Co⁶⁰ Gammas

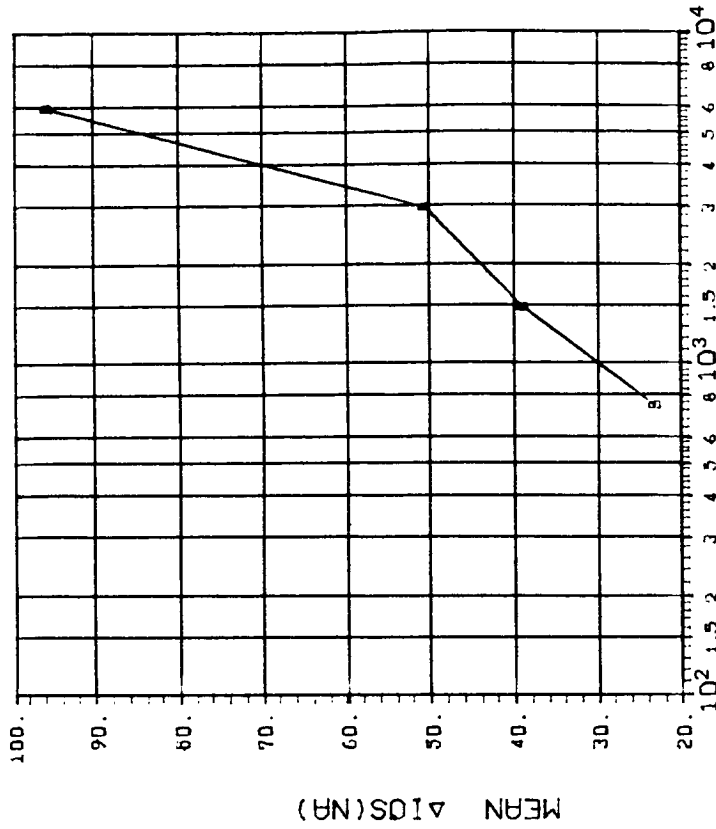
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
5	0.1
	0.2
	0.3
	0.5
	6.901
	12.60
	19.66
	33.16

DEVICE TYPE: OP-21 OP AMP

MFG: PMJ 5 DEVICES TEST DATE 6-28-83

REF: JPL LOG 1015-2 DATE CODE 8311



DOSE, rads(Si) Co⁶⁰ Gammas

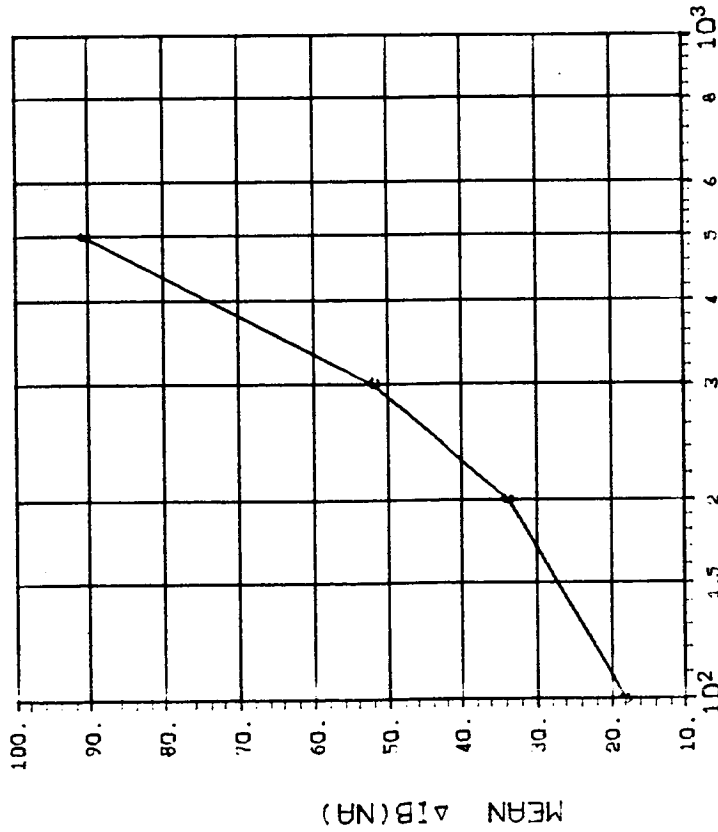
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	.75
	1.5
	3
	6
	47.35
	81.03
	110.7
	92.64

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 6-28-83

REF: JPL LOG 1015-1 DATE CODE 8311



DOSE, rads(Si) Co 60 Gammas

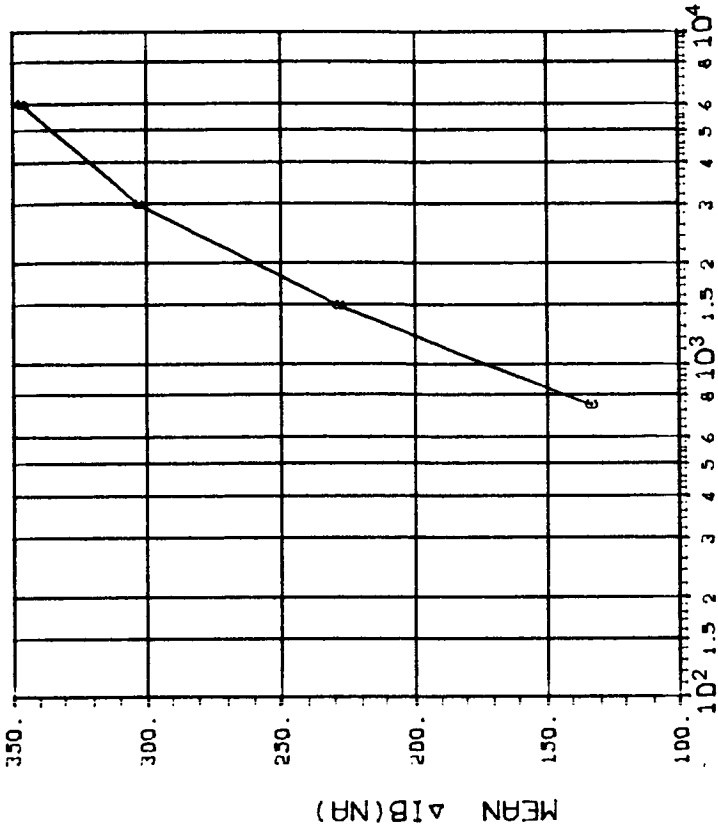
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	0.1 0.2 0.3 0.5 5.334 10.02 14.73 24.69

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 6-28-83

REF: JPL LOG 1015-2 DATE CODE 8311



DOSE, rads(Si) Co 60 Gammas

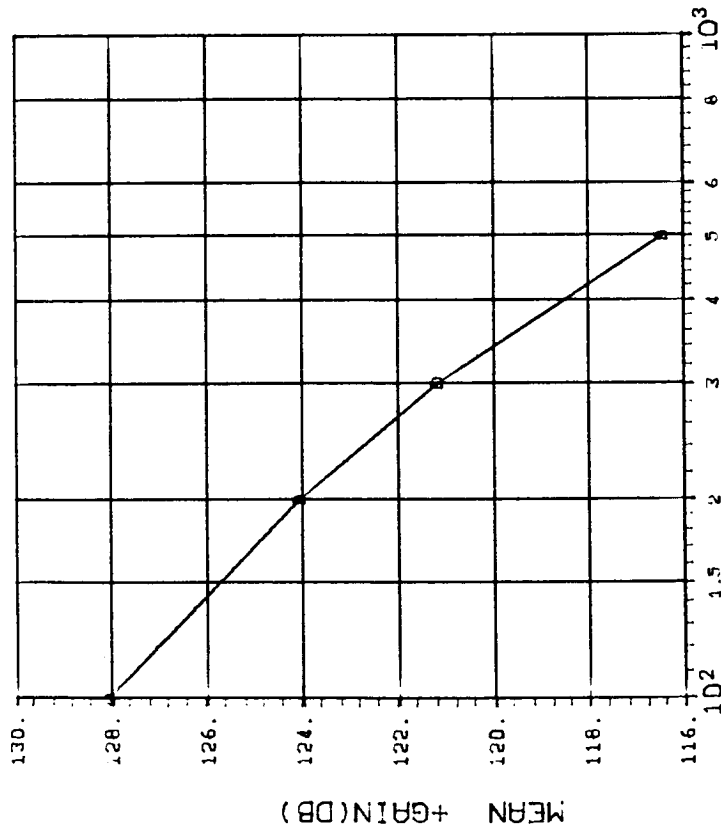
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	.75 1.5 3 6 34.45 54.64 69.26 59.76

DEVICE TYPE: OP-21 OP AMP

MFG: PM1 5 DEVICES TEST DATE 6-28-83

REF: JPL LOG 1015-1 DATE CODE 8311



DOSE, rads(Si) Co 60 Gammas

(4)+GAIN IN DB(1.0MA LOAD, +10V): VS DOSE

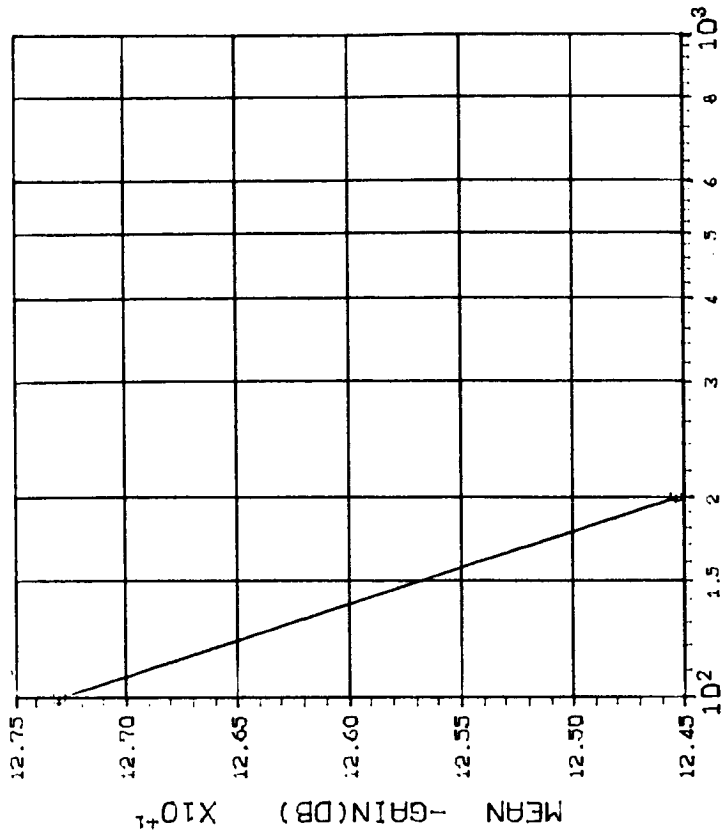
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	1.00	4.132 2.051 1.333 1.562

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10⁺²

DEVICE TYPE: OP-21 OP AMP

MFG: PM1 5 DEVICES TEST DATE 6-28-83

REF: JPL LOG 1015-1 DATE CODE 8311



DOSE, rads(Si) Co 60 Gammas

(5)-GAIN IN DB(1.0MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	2.932 1.462 *****

INITIAL MEAN VALUE -GAIN(DB) = 1.31X10⁺²

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-5-83
 REF: JPL LOG 1016-1 DATE CODE 8311

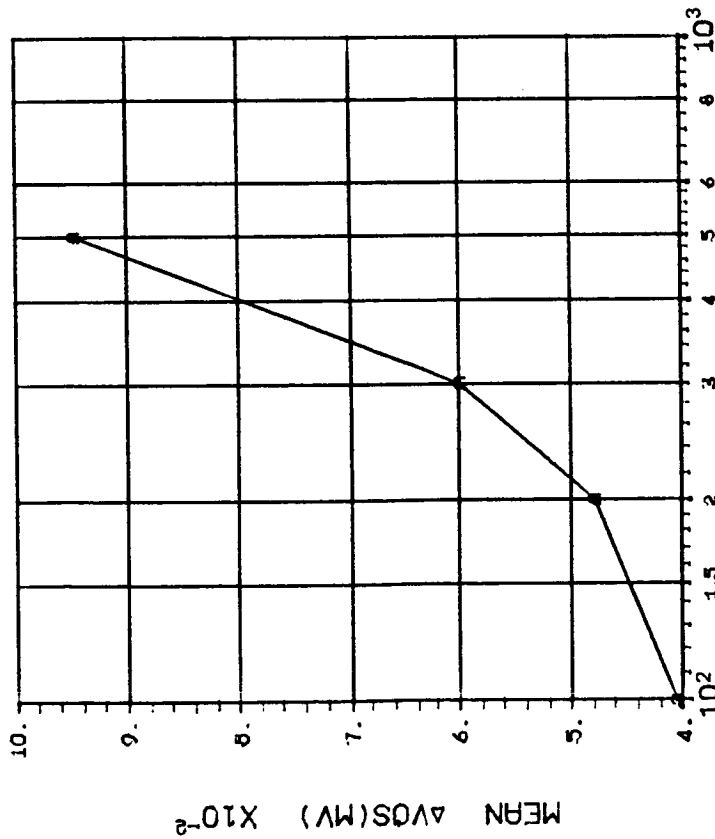


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	0.1 0.2 0.3 0.5
	.0403 .0343 .0358 .0792

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-5-83
 REF: JPL LOG 1016-2 DATE CODE 8311

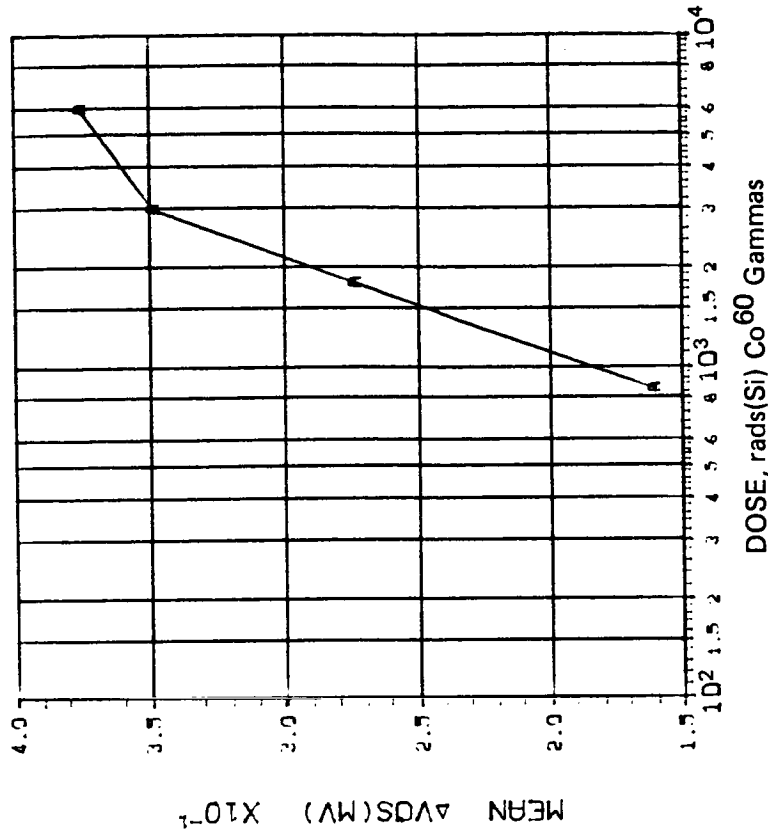
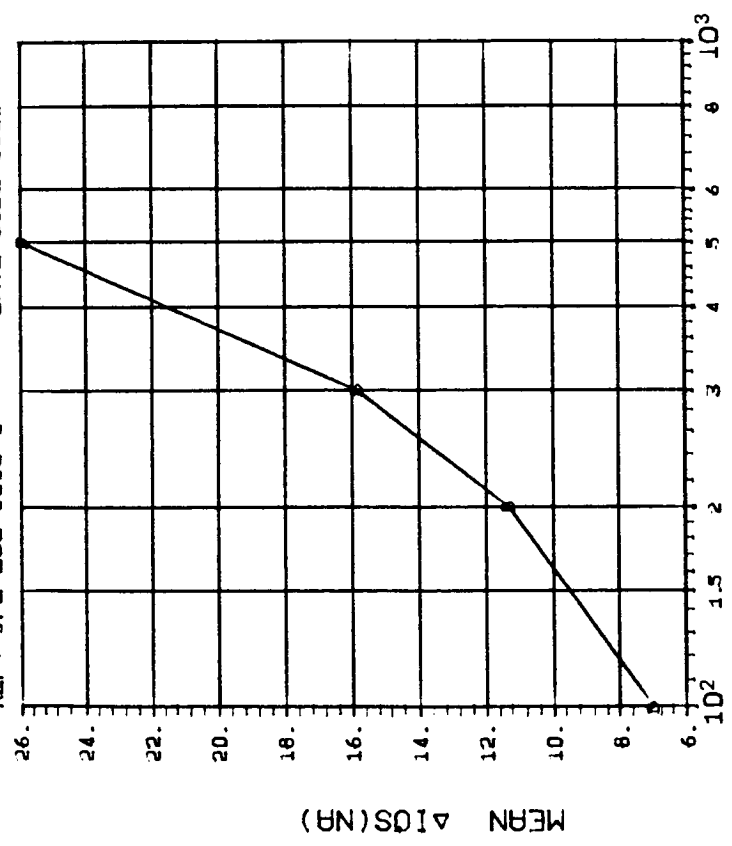
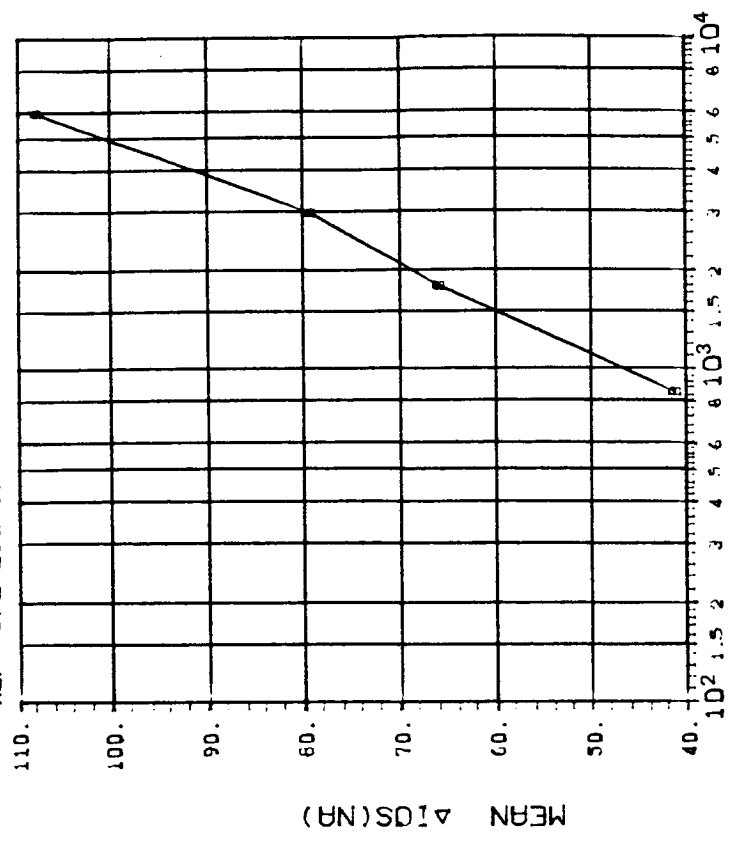


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	.75 1.5 3 6
	.1414 .2302 .3192 .3902

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-5-83
 REF: JPL LOG 1016-1 DATE CODE 8311



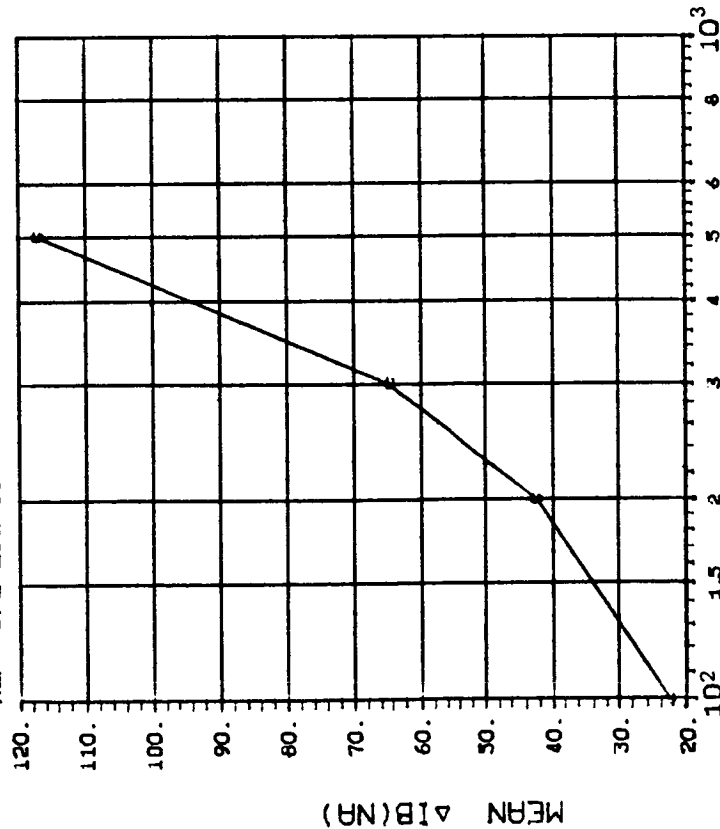
DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-5-83
 REF: JPL LOG 1016-2 DATE CODE 8311



DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 7-5-83

REF: JPL LOG 1016-1 DATE CODE 8311



DOSE, rads(Si) Co⁶⁰ Gammas

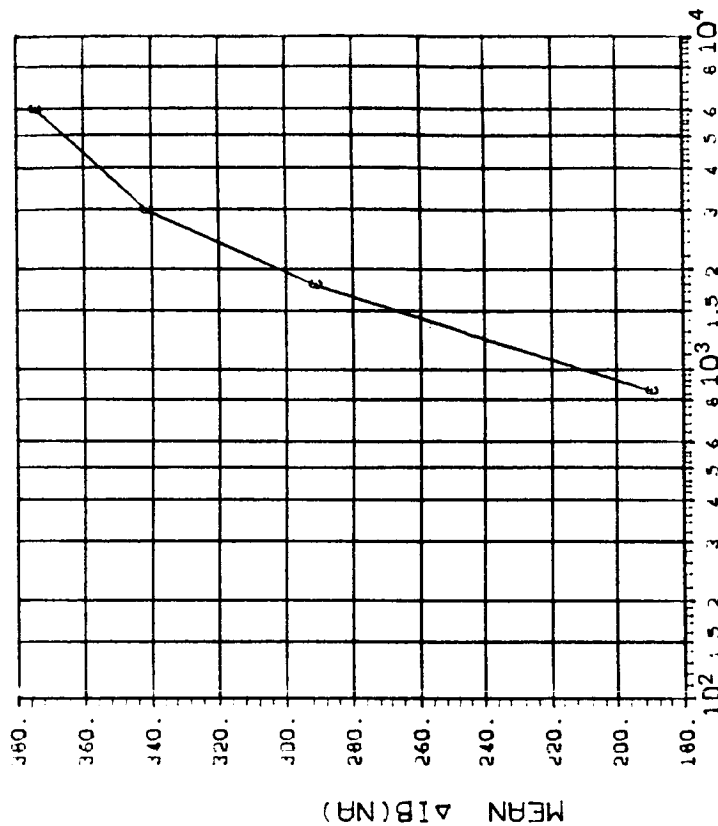
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	0.1
	0.2
	0.3
C	0.5
	8.389
	15.29
C	22.45
	37.77

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 7-5-83

REF: JPL LOG 1016-2 DATE CODE 8311



DOSE, rads(Si) Co⁶⁰ Gammas

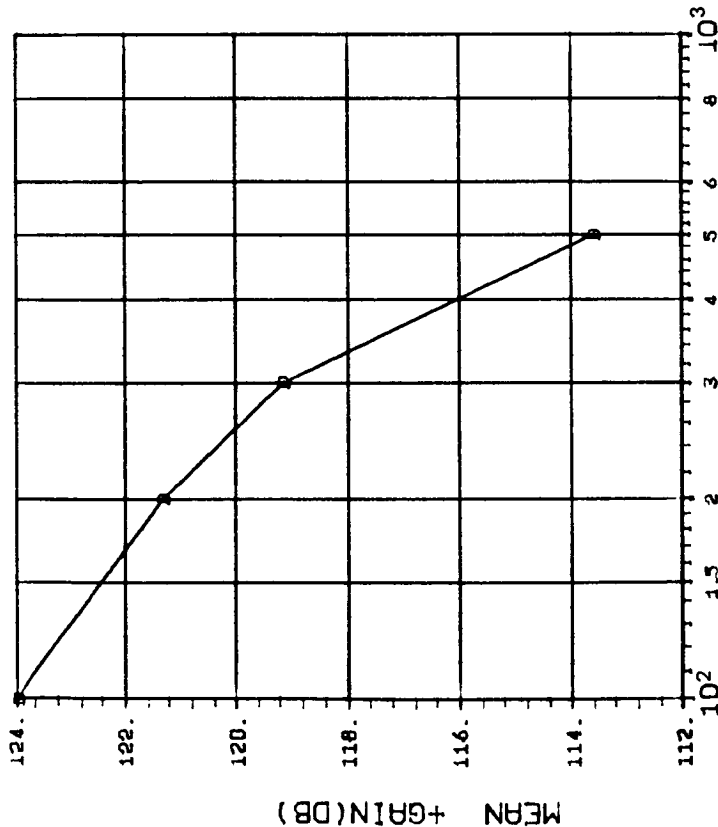
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	.75
	1.5
	3
C	6
	60.78
	99.23
C	116.6
	139.6

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 7-5-83

REF: JPL LOG 1016-1 DATE CODE 8311



DOSE, rads(Si) Co 60 Gammas

(4)+GAIN IN DB(1.0MA LOAD,+10V): VS DOSE

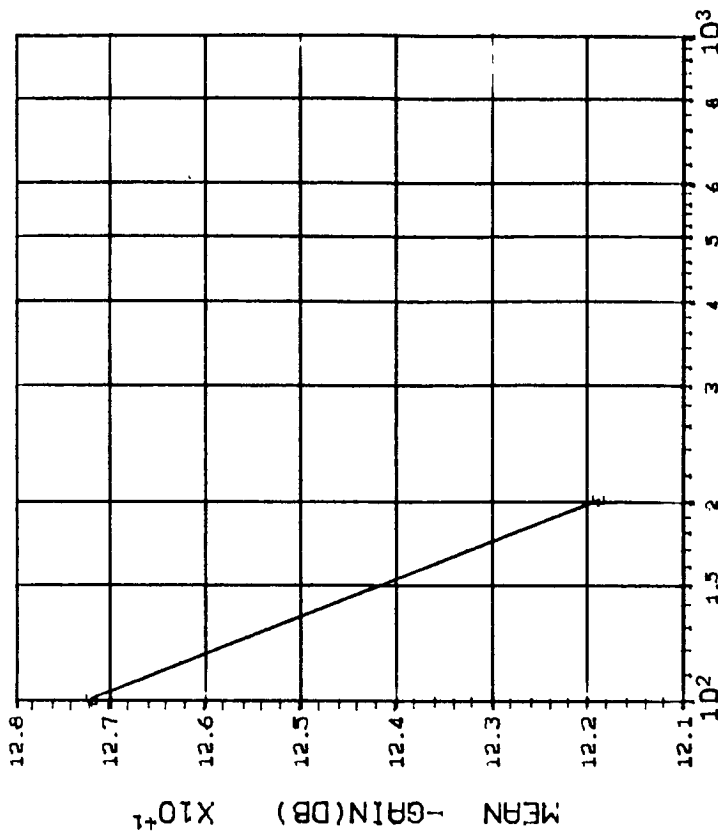
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	1.00	1.294 2.036 1.811 3.689

INITIAL MEAN VALUE +GAIN(DB) = 1.28X10¹²

DEVICE TYPE: OP-21 OP AMP

MFG: PMI 5 DEVICES TEST DATE 7-5-83

REF: JPL LOG 1016-1 DATE CODE 8311



DOSE, rads(Si) Co 60 Gammas

(5)-GAIN IN DB(1.0MA LOAD,-10V): VS DOSE

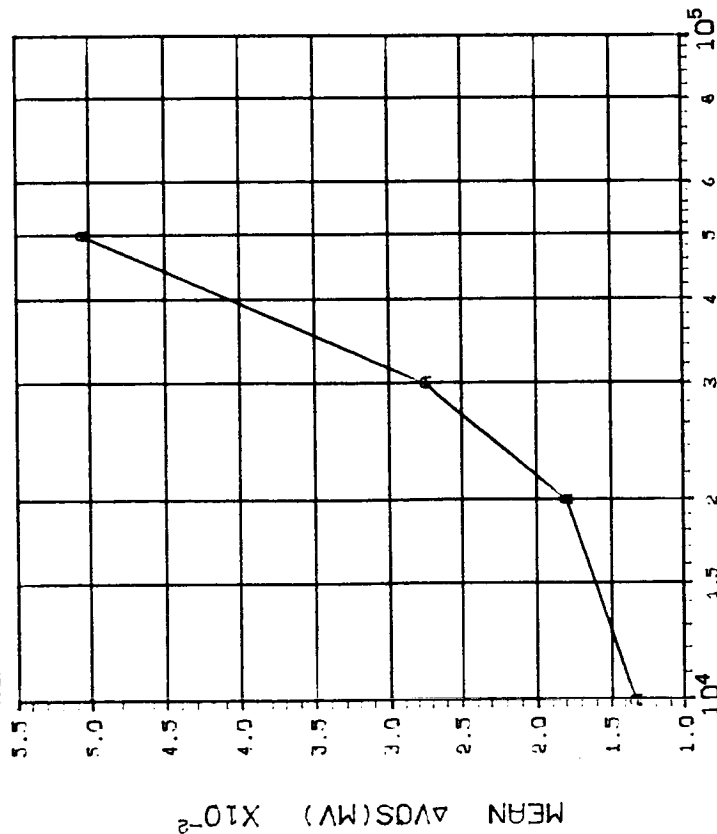
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	1.00	0.1 0.2 0.3 0.5 4.366 4.679 *****

INITIAL MEAN VALUE -GAIN(DB) = 1.27X10¹²

DEVICE TYPE: OP-21 OP AMP

MFG: PM1 5 DEVICES TEST DATE 7-12-83

REF: JPL LOG 1017-1 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons

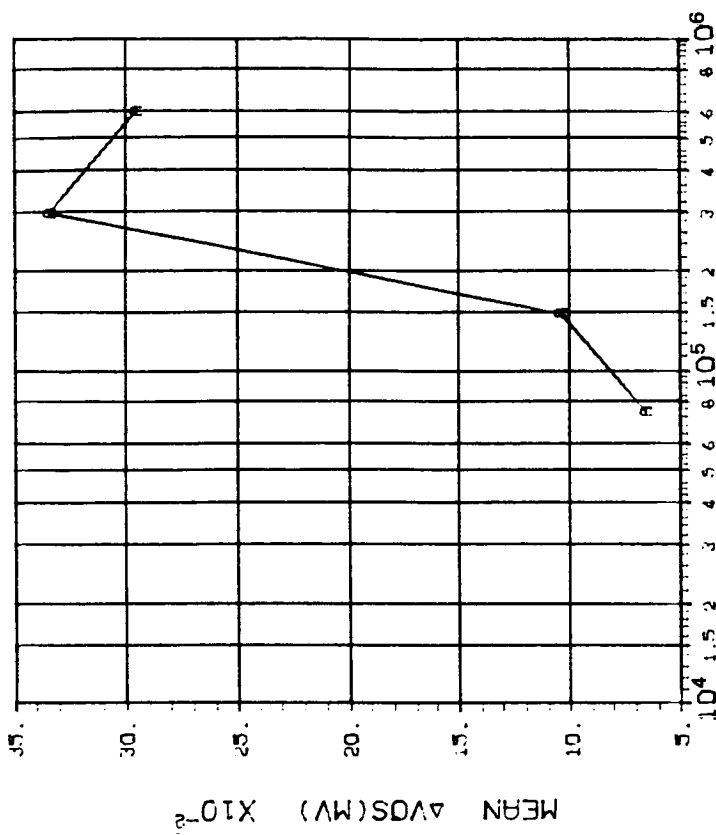
(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	10	20 30 50
A	.0150	.0214 .0367 .0640

DEVICE TYPE: OP-21 OP AMP

MFG: PM1 5 DEVICES TEST DATE 7-12-83

REF: JPL LOG 1017-2 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons

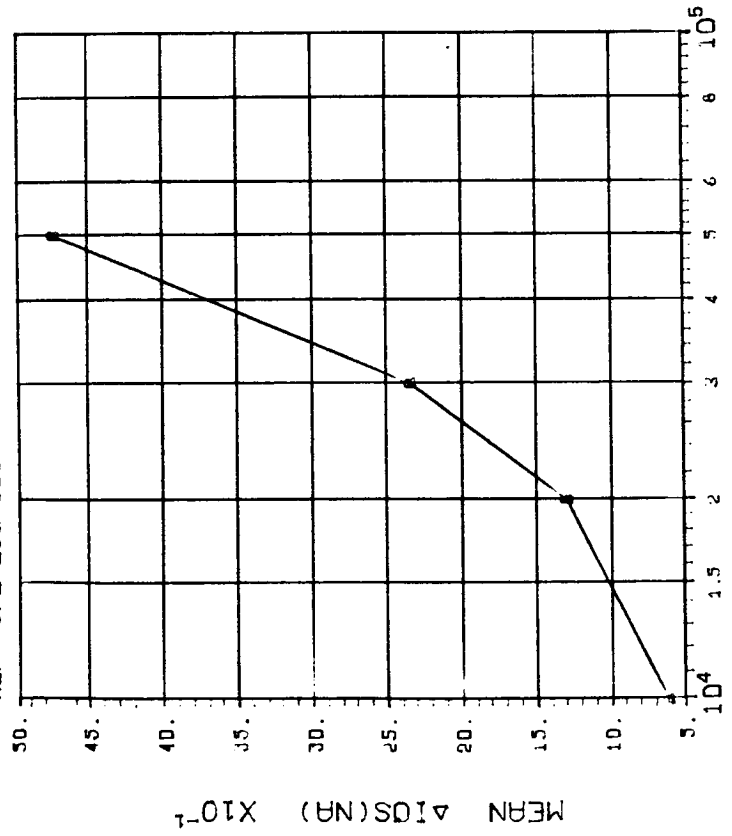
(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600
A	.0739	.1506 .3347 .2769

DEVICE TYPE: OP-21 OP AMP

MFG: PMJ 5 DEVICES TEST DATE 7-12-83

REF: JPL LOG 1017-1 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons

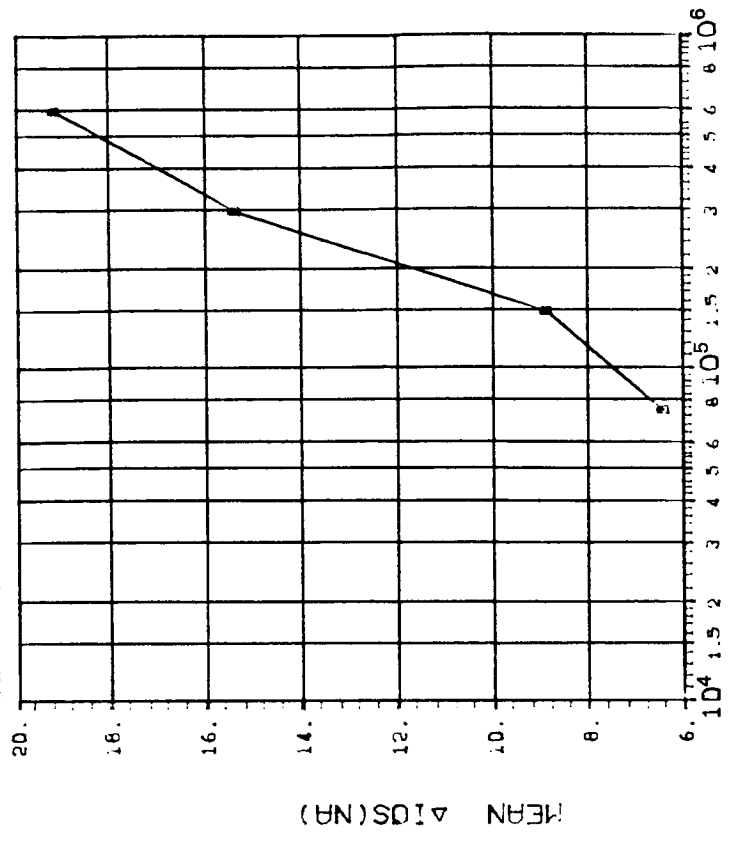
(2) $\Delta IOS(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	10	20
	30	50
1.062 2.977 3.642 6.907		

DEVICE TYPE: OP-21 OP AMP

MFG: PMJ 5 DEVICES TEST DATE 7-12-83

REF: JPL LOG 1017-2 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons

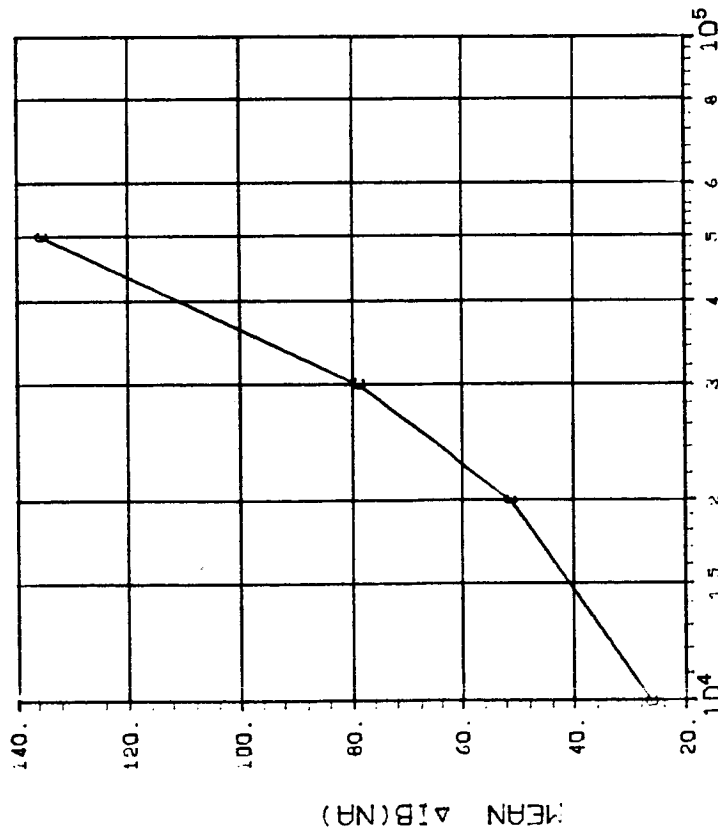
(2) $\Delta IOS(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	150
	300	600
8.621 13.03 6.914 16.56		

DEVICE TYPE: OP-21 OP AMP

MFG: PMJ 5 DEVICES TEST DATE 7-12-83

REF: JPL LOG 1017-1 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons

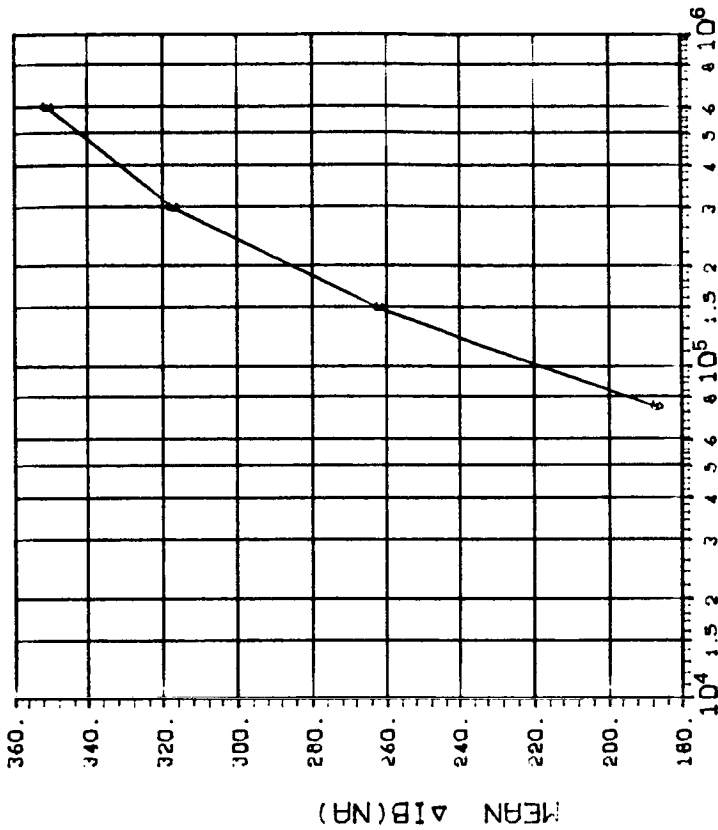
(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	10
	20
	30
C	50
	10.52
	16.45
C	28.92
	36.53
	44.49
C	52.90
	600
	104.0

DEVICE TYPE: OP-21 OP AMP

MFG: PMJ 5 DEVICES TEST DATE 7-12-83

REF: JPL LOG 1017-2 DATE CODE 8311

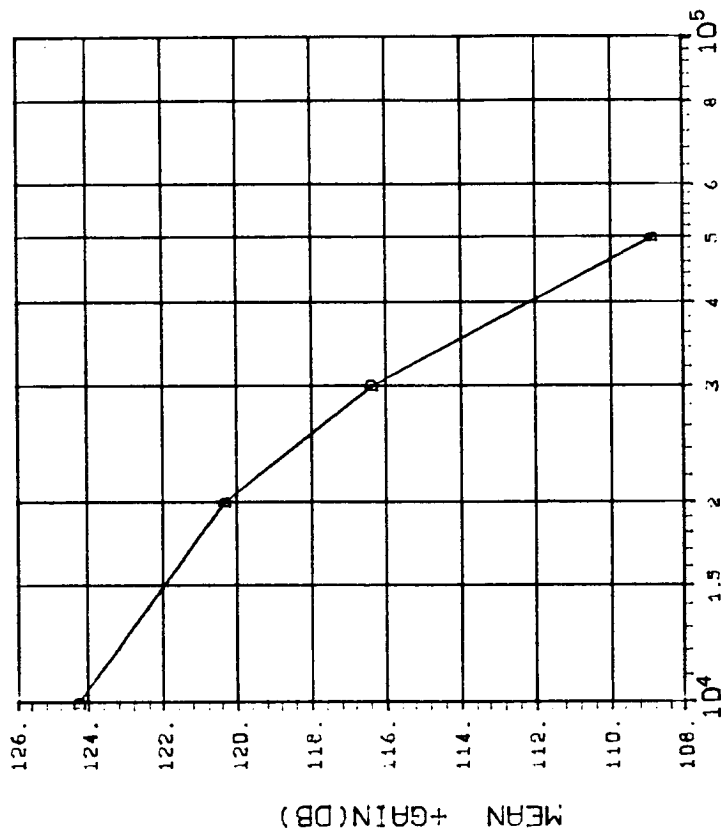


DOSE, rads(Si) 2.5 MeV electrons

(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
C	600
	104.0
	150
C	300
	600
	104.0

DEVICE TYPE: OP-21 OP AMP
 MFG: PM1 5 DEVICES TEST DATE 7-12-83
 REF: IPL LOG 1017-1 DATE CODE 8311

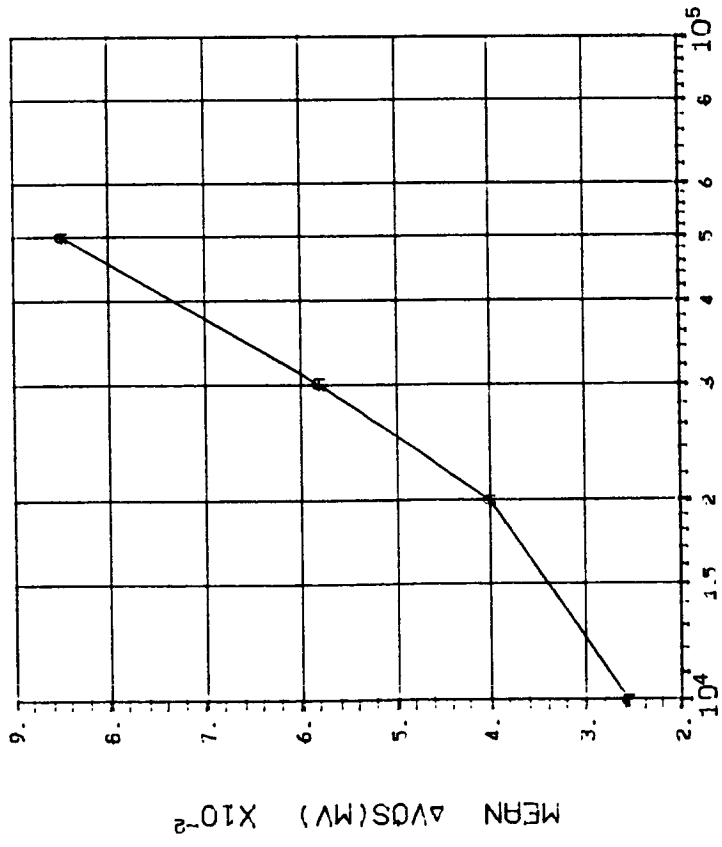


DOSE, rads(Si) 2.5 MeV electrons
 (4)+GAIN IN DB(1.0MA LOAD,+10V) : VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I_L (mA)	DOSE, kilorads(Si)
D	1.00	10
		20
		30
		50
	1.601	.7846
	1.219	.7066

INITIAL MEAN VALUE +GAIN(DB) = 1.26×10^{12}

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-18-83
 REF: JPL LOG 1016 DATE CODE 8311

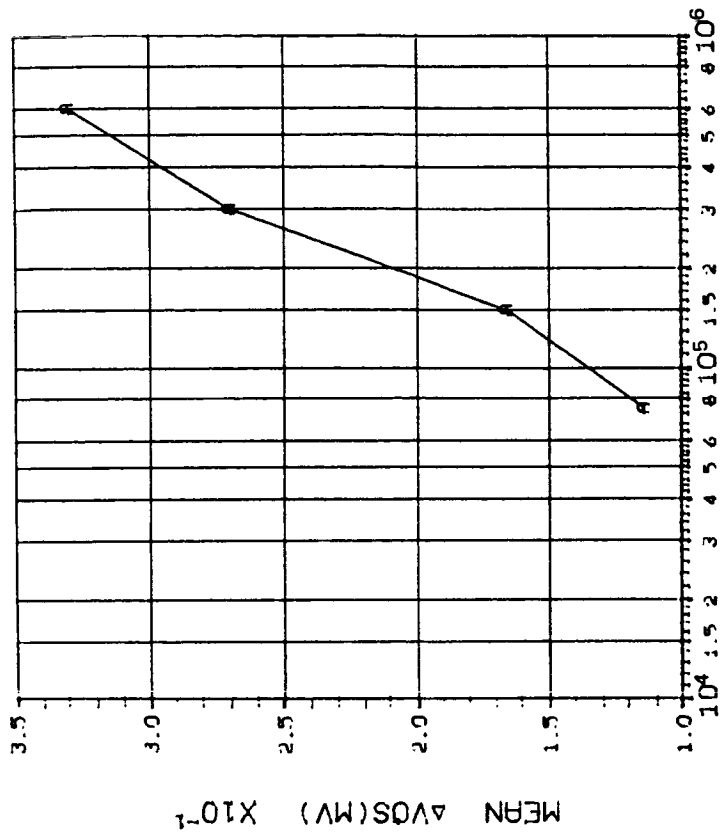


DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	10	20 30 50
A	.0249	.0268 .0374 .0658

DEVICE TYPE: OP-21 OP AMP
 MFG: PMI 5 DEVICES TEST DATE 7-18-83
 REF: JPL LOG 1016 DATE CODE 8311



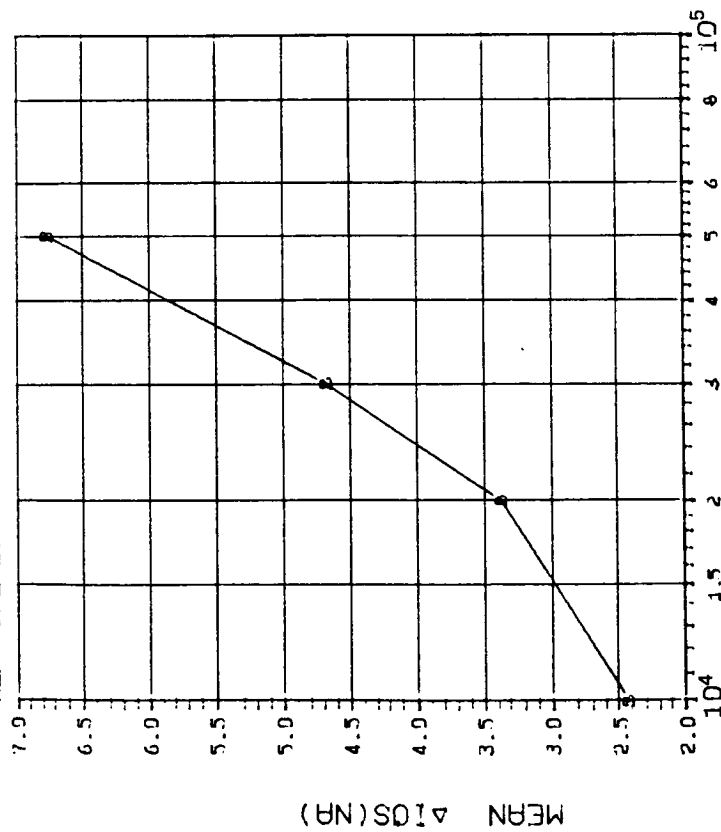
DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600
A	.0711	.0530 .1795 .1104

DEVICE TYPE: OP-21 OP AMP

MFG: PMJ 5 DEVICES TEST DATE 7-16-83
REF: JPL LOG 1018 DATE CODE 8311



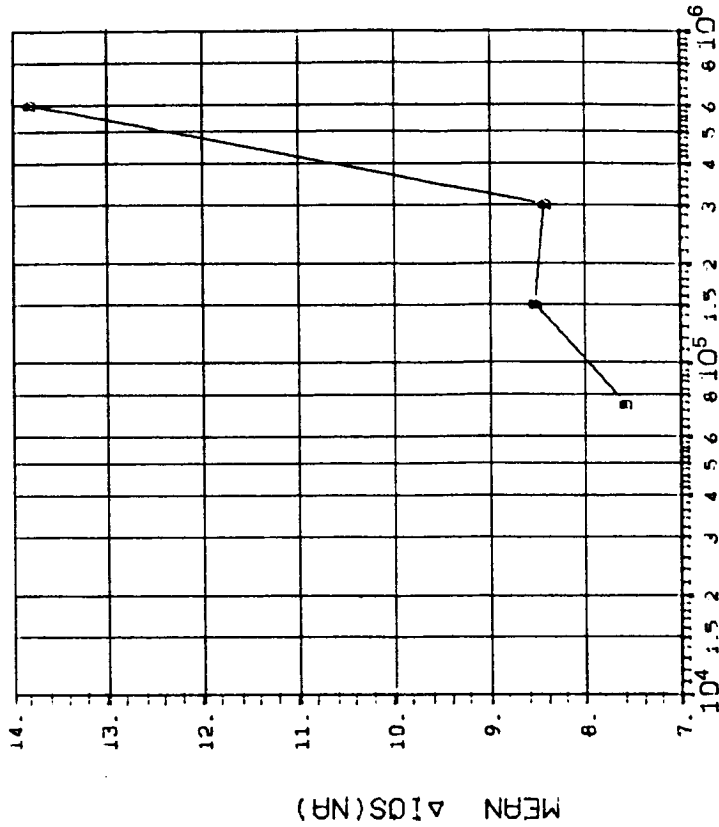
DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	10 20 30 50
	2.578 2.199 3.511 4.806

DEVICE TYPE: OP-21 OP AMP

MFG: PMJ 5 DEVICES TEST DATE 7-18-83
REF: JPL LOG 1018 DATE CODE 8311



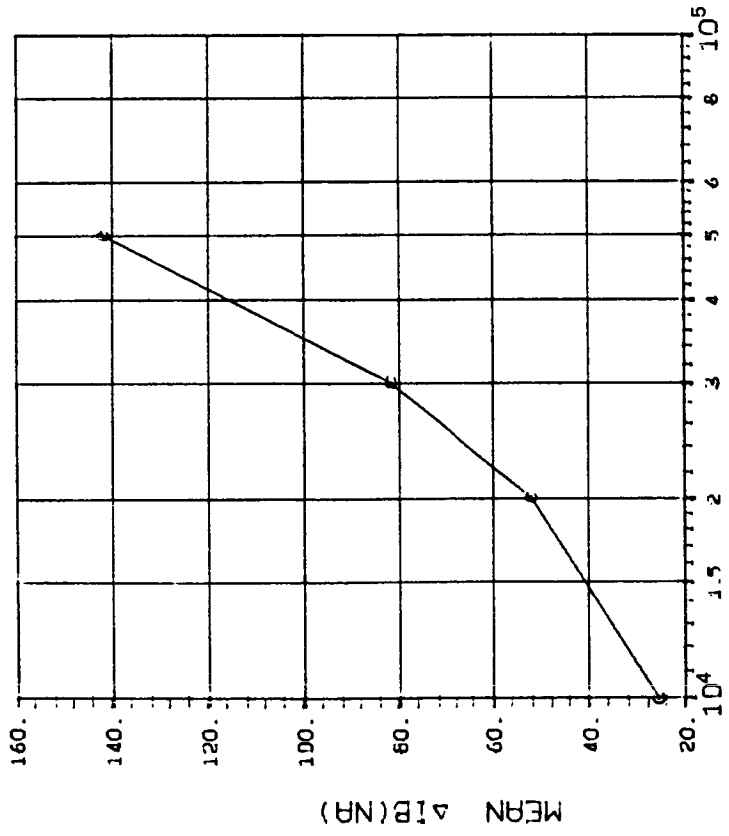
DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300 600
	5.952 5.189 6.174 8.211

U
1
4

DEVICE TYPE: OP-21 OP AMP
MFG: PMJ 5 DEVICES TEST DATE 7-18-83
REF: JPL LOG 1018 DATE CODE 8311

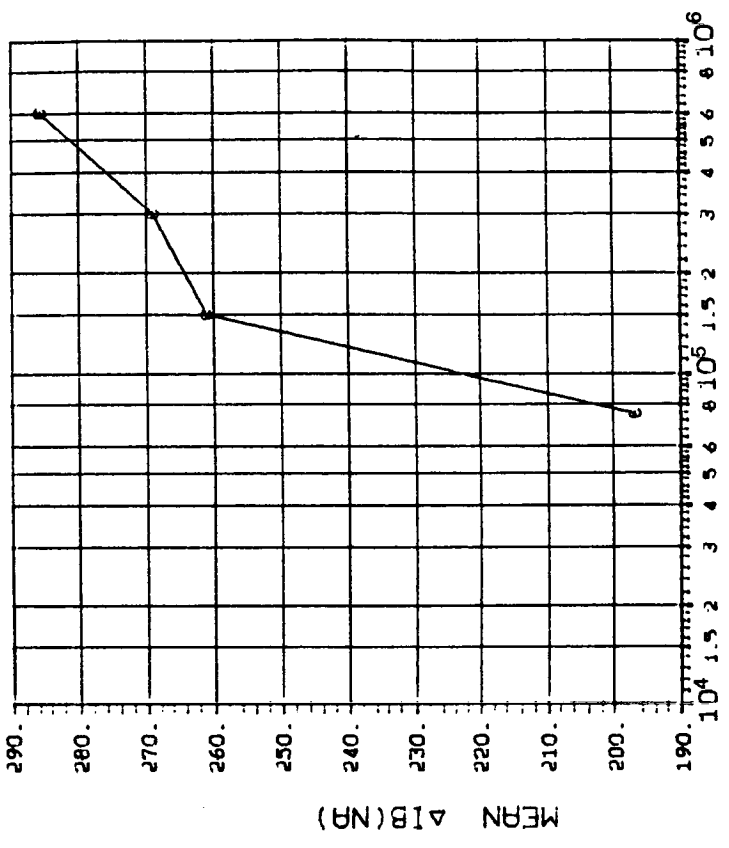


DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	10
	20
	30
3.580 7.669 12.57 20.26	

DEVICE TYPE: OP-21 OP AMP
MFG: PMJ 5 DEVICES TEST DATE 7-18-83
REF: JPL LOG 1018 DATE CODE 8311

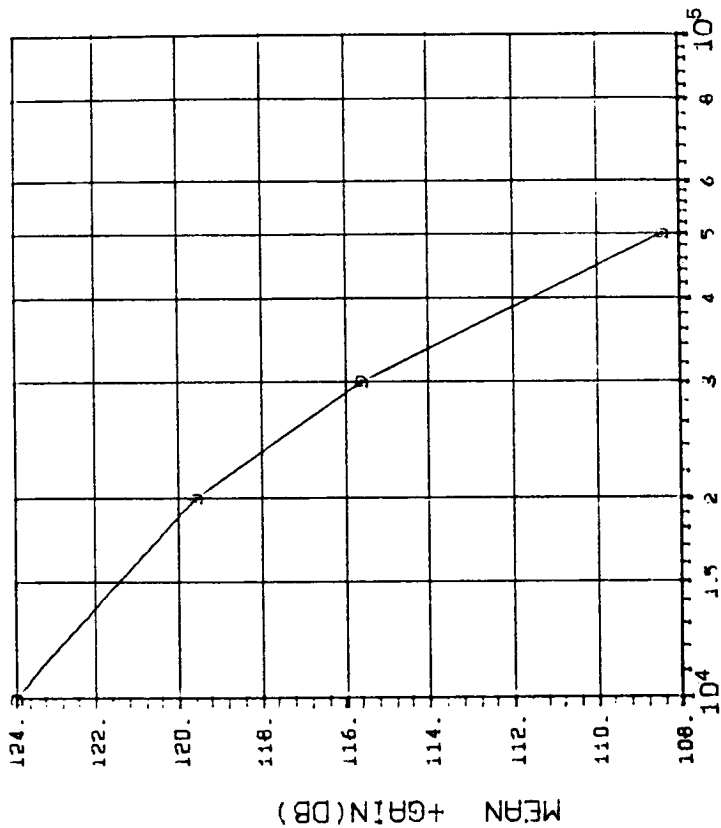


DOSE, rads(Si) 2.5 MeV electrons

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
22.22 16.00 25.77 41.50	

DEVICE TYPE: OP-21 OP AMP
 MFG: PMJ 5 DEVICES TEST DATE 7-16-83
 REF: JPL LOG 1018 DATE CODE 8311



DOSE, rads(Si) 2.5 MeV electrons
 (4)+GAIN IN DB(1.0MA LOAD,+10V): VS DOSE

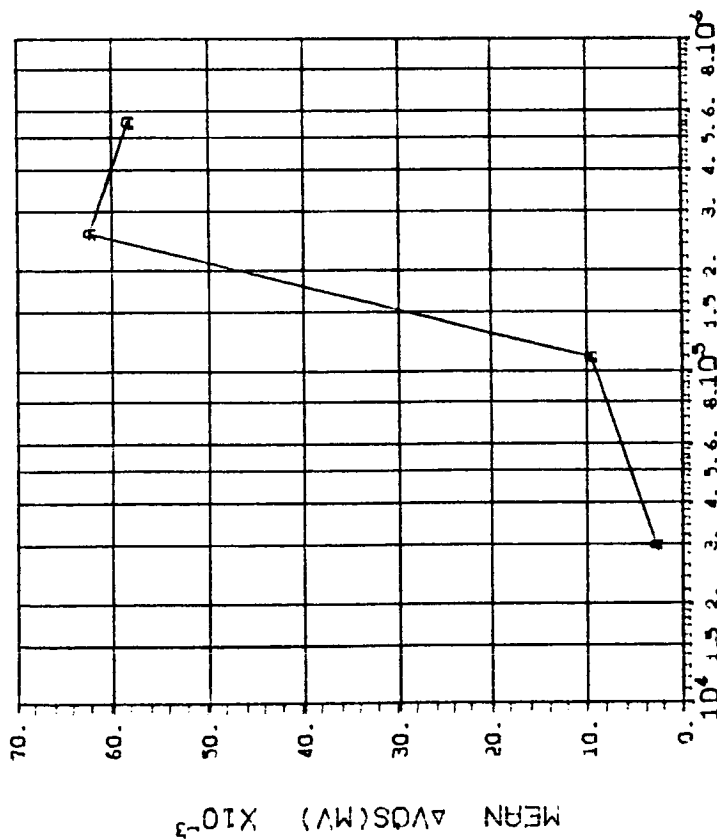
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	1.00	10 20 30 50
		.6348 1.269 .5668 3.356

INITIAL MEAN VALUE +GAIN(DB) = 1.27×10^{12}

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



DOSE, rads(Sj) Co⁶⁰ Gammas

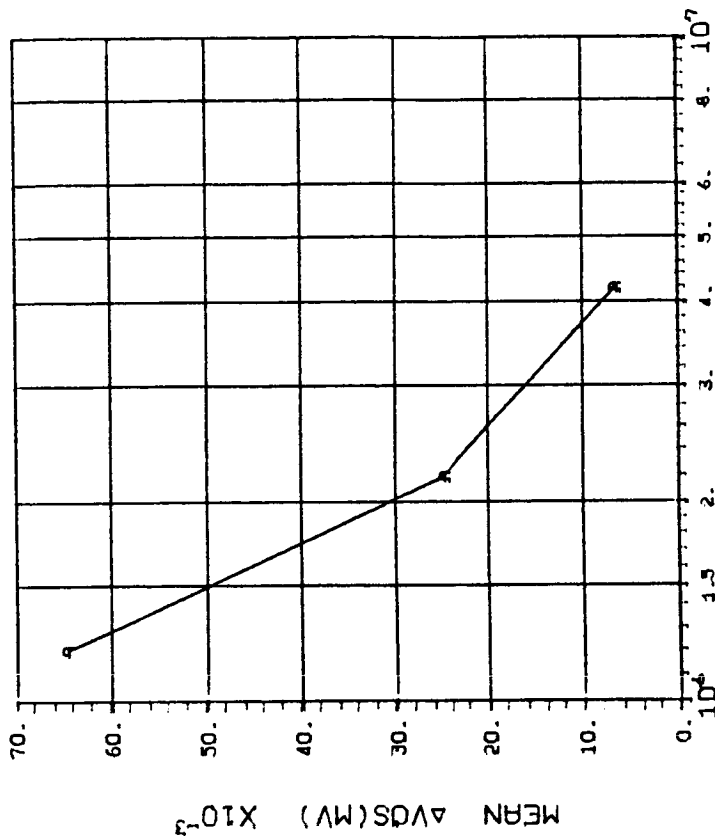
(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
A	3.0E4 1.1E5 2.6E3 3.6E3
	.0028 .0102 .0479 .0319

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



DOSE, rads(Sj) Co⁶⁰ Gammas

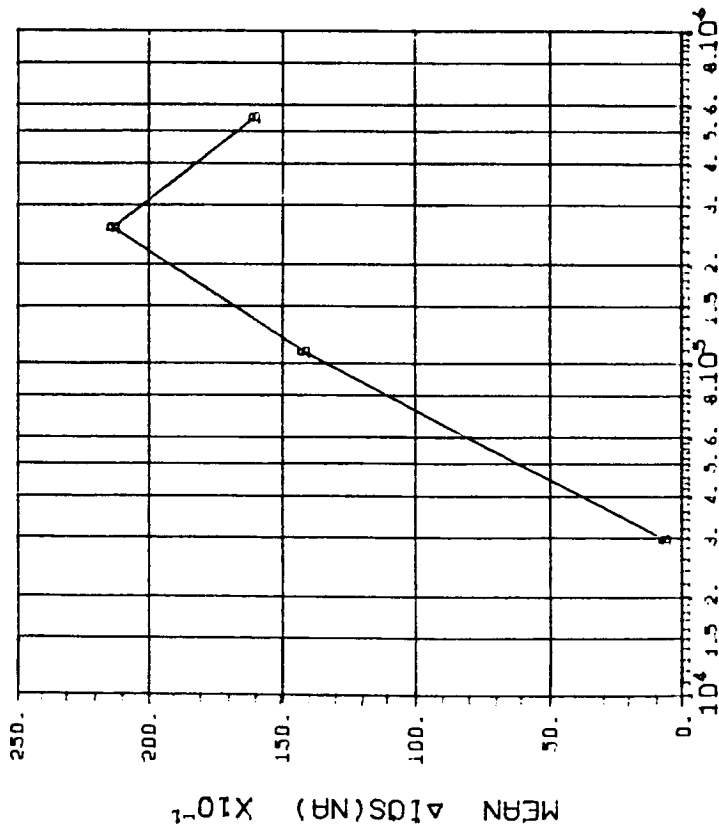
(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
A	1.2E6 2.2E6 4.2E6
	.0694 .0174 .0073

DEVICE TYPE: UP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



DOSE, rads(Sj) Co⁶⁰ Gammas

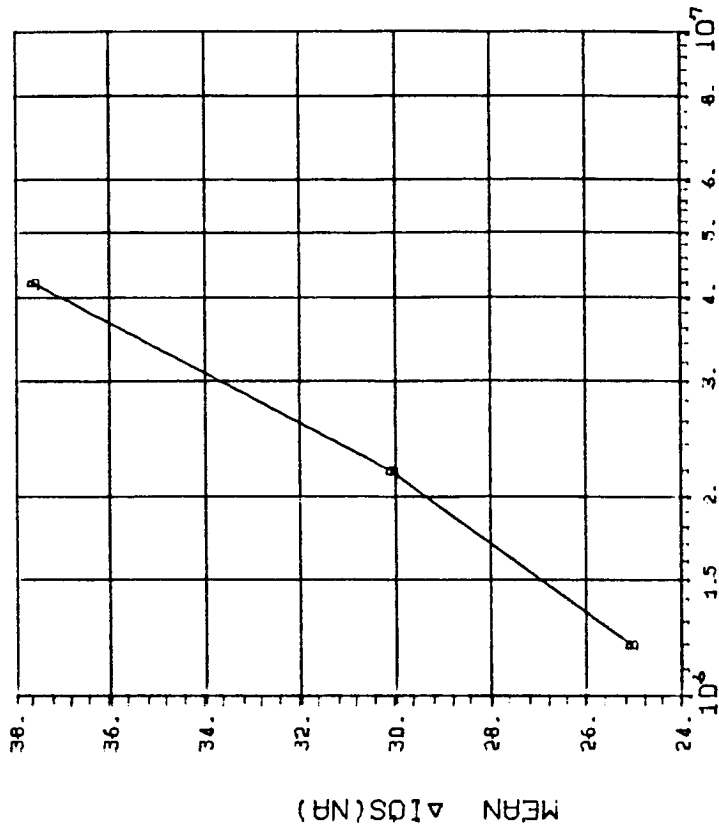
(2) Δ IOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
B	3.0E4 1.1E5 2.6E5 3.6E5
	1.174 4.607 13.26 13.86

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



DOSE, rads(Sj) Co⁶⁰ Gammas

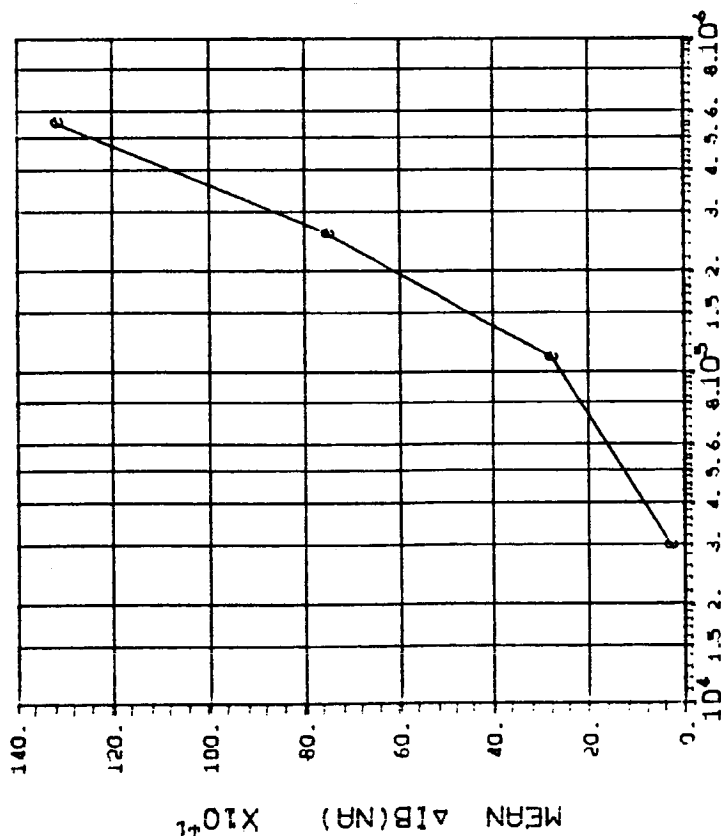
(2) Δ IOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
B	1.2E6 2.2E6 4.2E6
	20.28 21.35 21.12

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



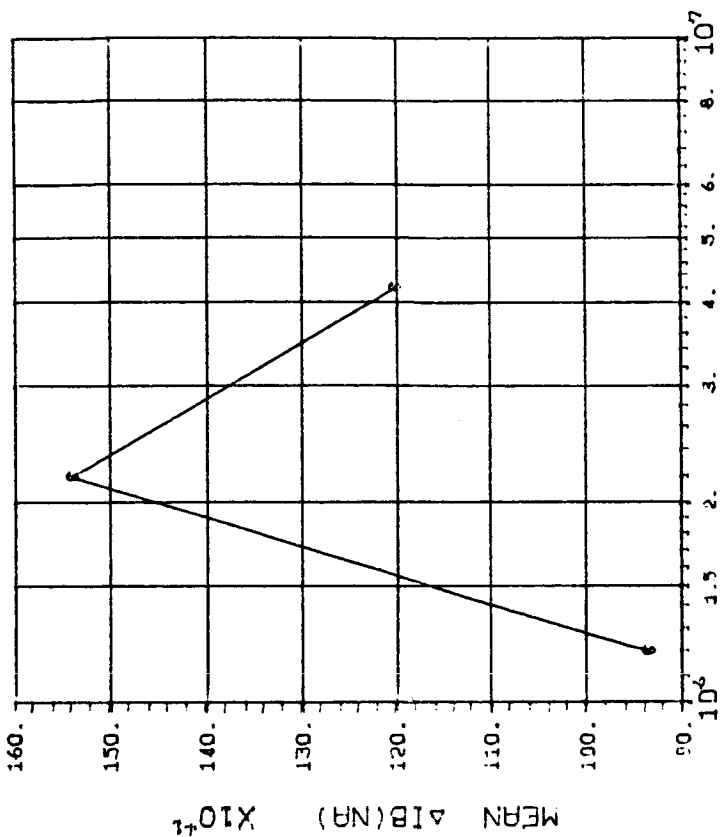
DOSE, rads(Sj) Co⁶⁰ Gammas
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
C	3.0E4 1.1E5 2.6E5 5.6E5
	11.57 93.26 241.3 176.2

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



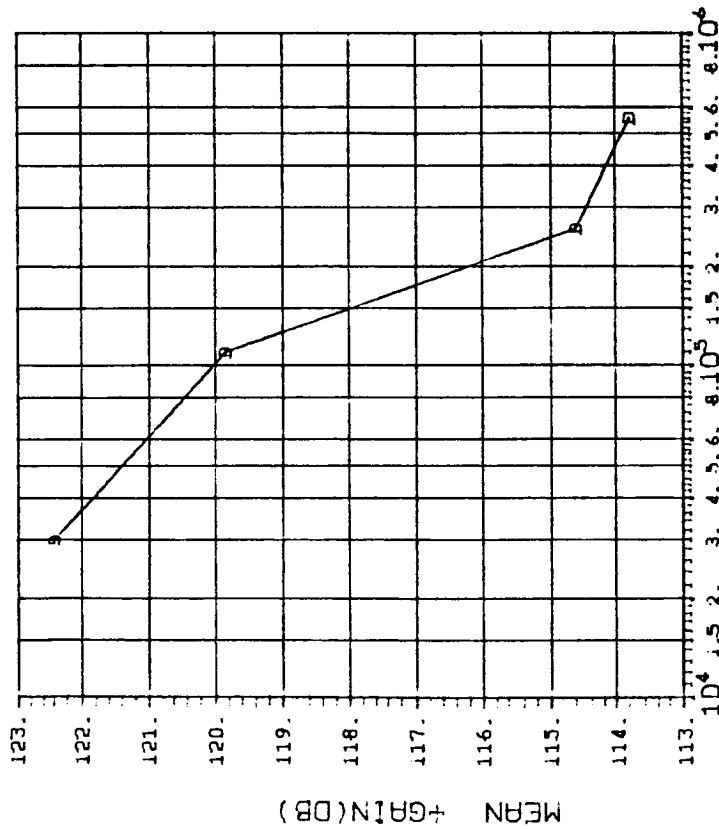
DOSE, rads(Sj) Co⁶⁰ Gammas
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Sj)
C	1.2E6 2.2E6 4.2E6
	403.1 172.7 328.5

DEVICE TYPE: OP-27 OP AMP

MFG: ADJ 5 DEVICES TEST DATE 08-07-85

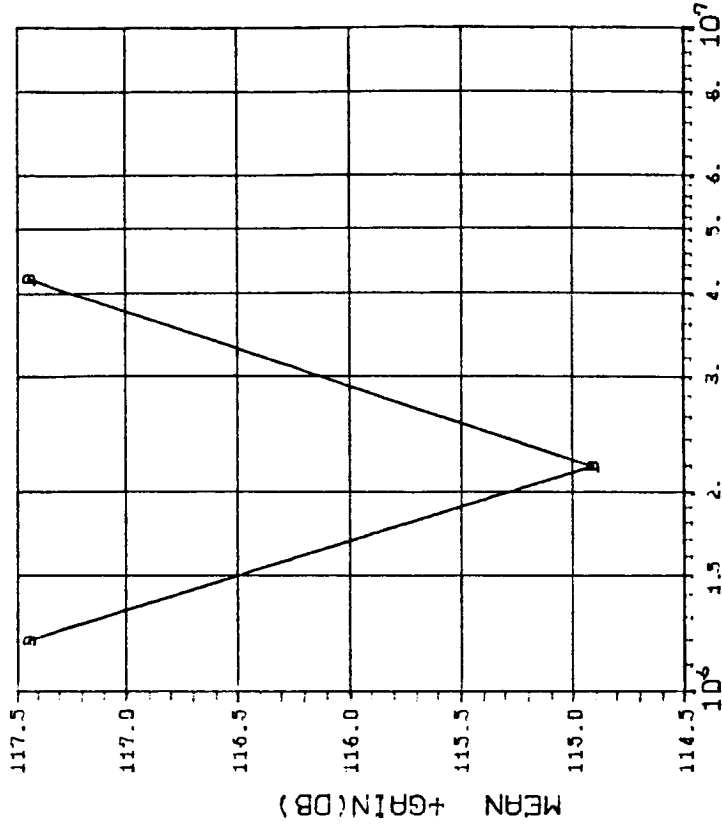
REF: JPL LOG 1210 DATE CODE 8436



DEVICE TYPE: OP-27 OP AMP

MFG: ADJ 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436



DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436

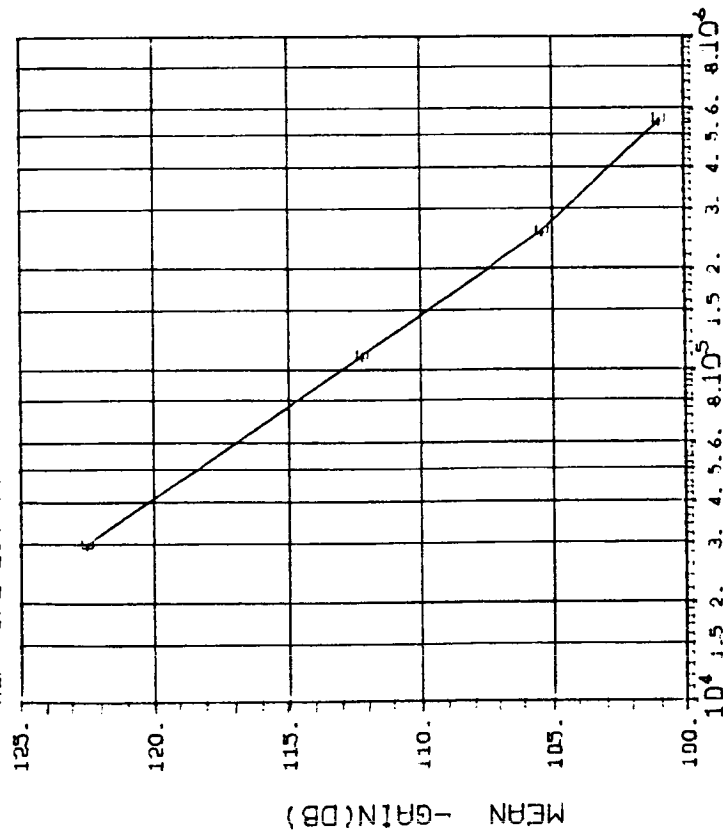


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
E	10.0	1.346 1.002 1.329 .7769

INITIAL MEAN VALUE -GAIN(DB) = 1.25X10⁺²

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 08-07-85

REF: JPL LOG 1210 DATE CODE 8436

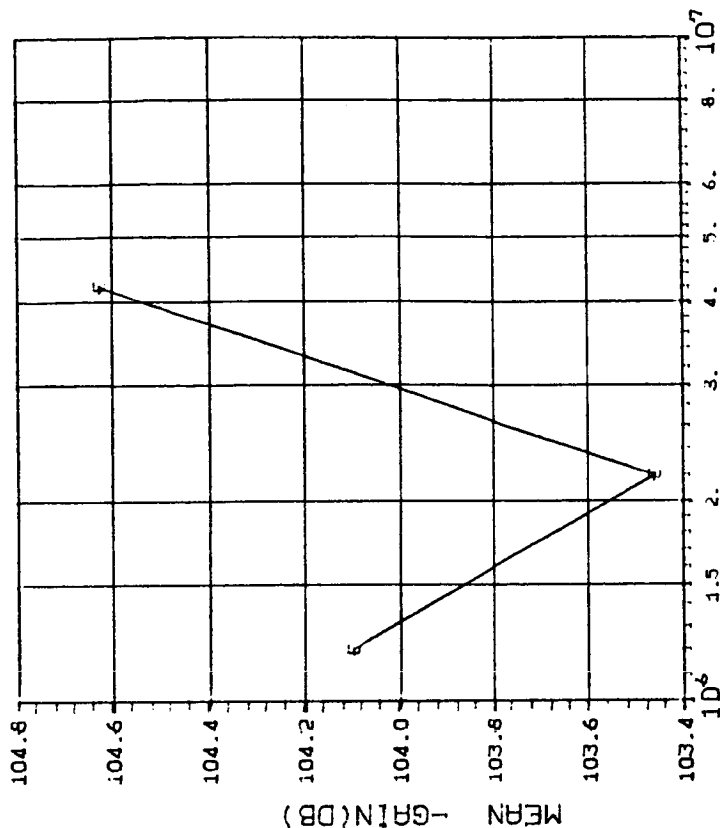


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
E	10.0	1.2E6 2.2E6 4.2E6

INITIAL MEAN VALUE -GAIN(DB) = 1.25X10⁺²

DEVICE TYPE: OP-27 OP AMP

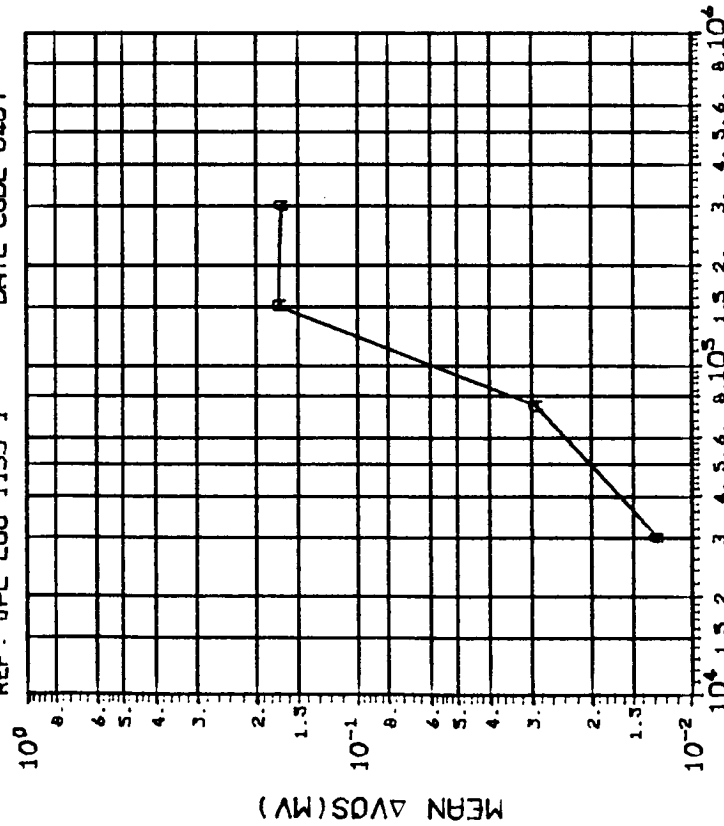
MFG: ADI

5 DEVICES

TEST DATE 09-05-85

REF: JPL LOG 1135-1

DATE CODE 8407



DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 7.5E4 1.5E5 3.0E5
	.0043 .0286 .2025 .2078

INITIAL MEAN VALUE VOS(MV) = 1.07X10⁻²

DEVICE TYPE: OP-27 OP AMP

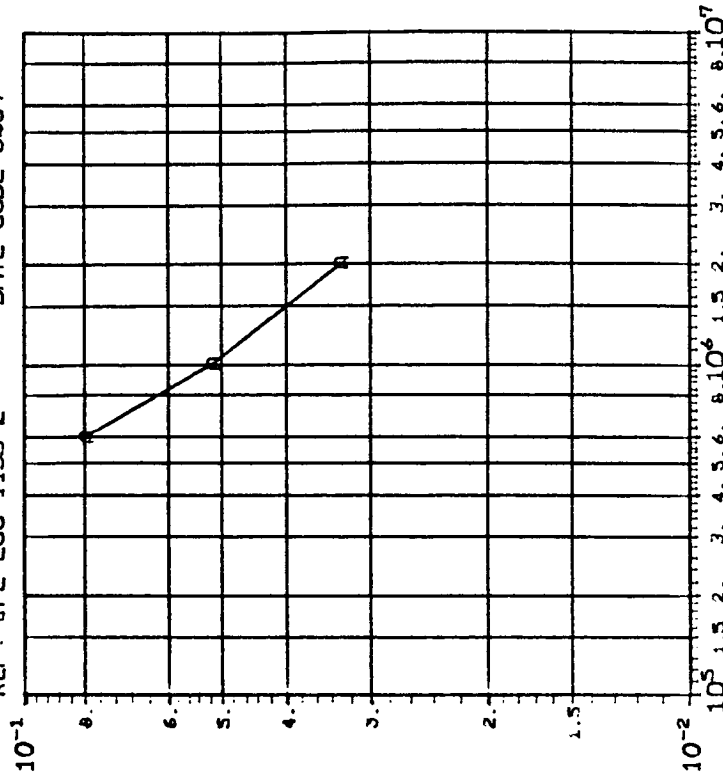
MFG: ADI

5 DEVICES

TEST DATE 09-05-85

REF: JPL LOG 1135-2

DATE CODE 8407



DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

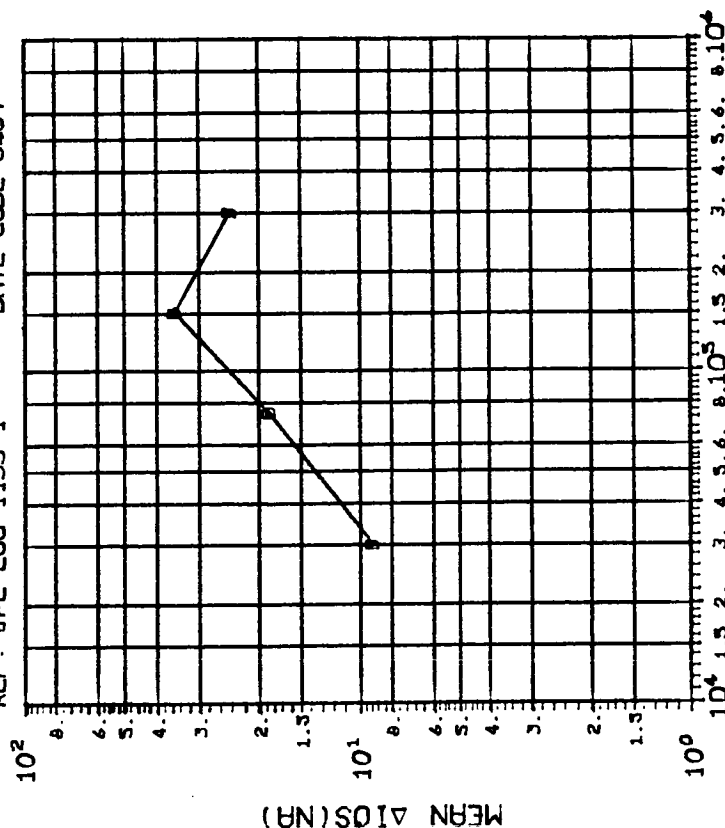
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	6.0E5 1.0E6 2.0E6
	.0894 .0336 .0122

INITIAL MEAN VALUE VOS(MV) = 1.07X10⁻²

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1135-1 DATE CODE 8407



DOSE, rads(Si) Co⁶⁰ Gammas
(2)ΔIOS(NA): VS DOSE

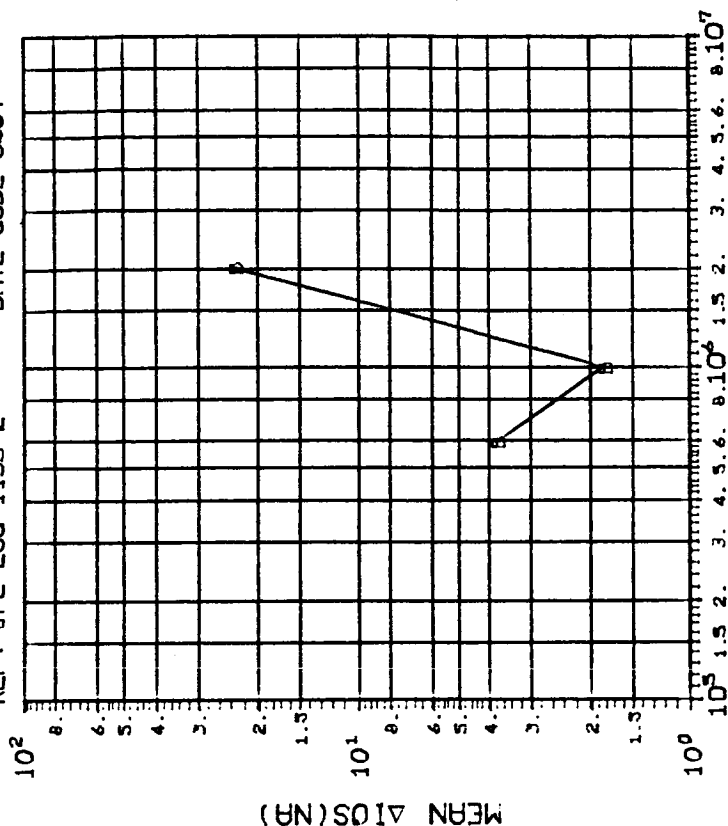
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 7.5E4 1.5E5 3.0E5
	6.773 11.98 27.79 79.20

INITIAL MEAN VALUE IOS(NA) = 2.73X10⁻¹

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1135-2 DATE CODE 8407



DOSE, rads(Si) Co⁶⁰ Gammas
(2)ΔIOS(NA): VS DOSE

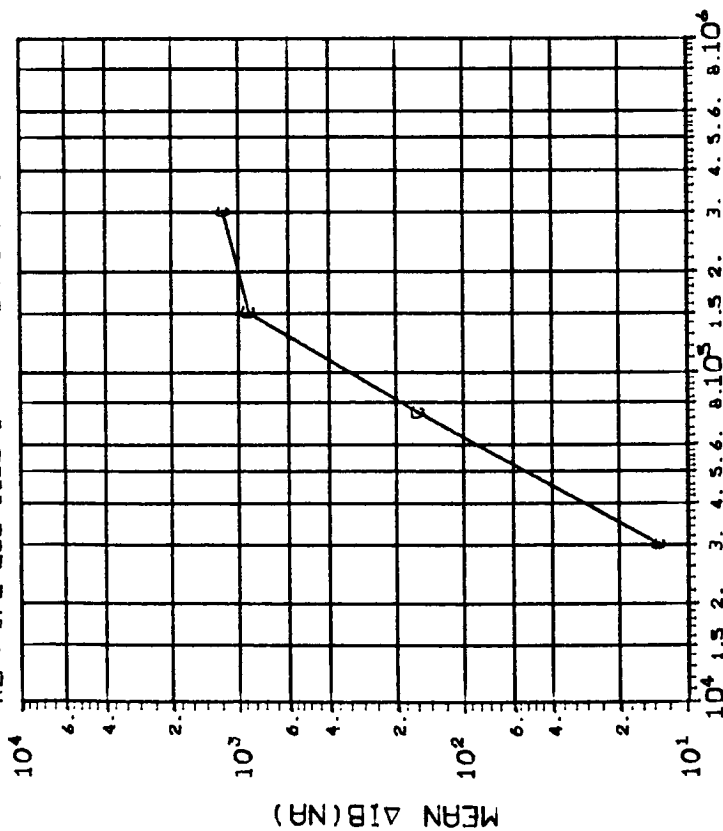
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	6.0E3 1.0E6 2.0E6
	77.61 44.06 26.37

INITIAL MEAN VALUE IOS(NA) = 2.73X10⁻¹

DEVICE TYPE: GP-27 GP AMP

MFG: ADI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1135-1 DATE CODE 8407



DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

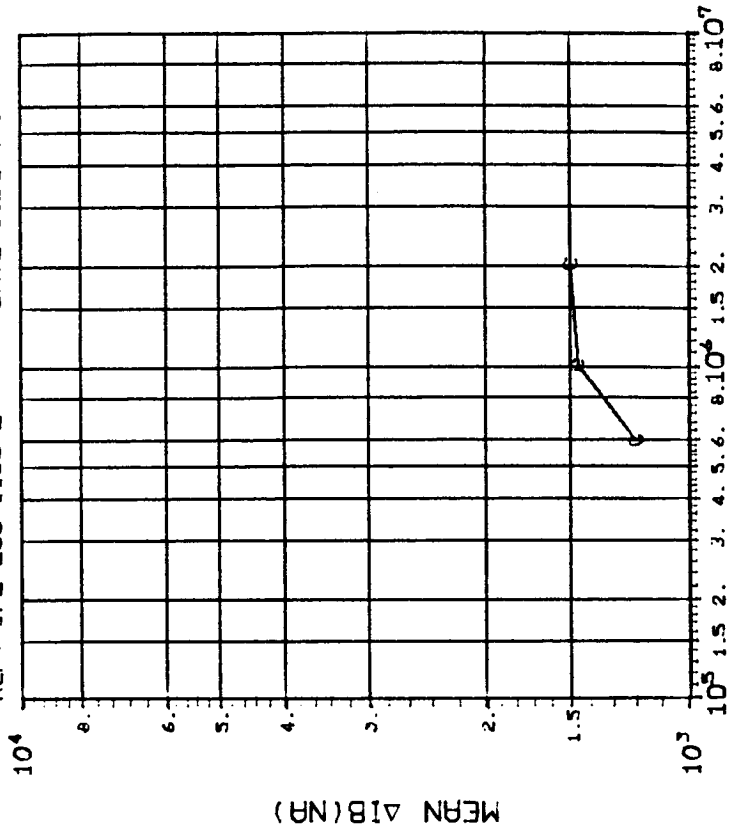
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
	7.294 212.2 1485. 913.0

INITIAL MEAN VALUE IB(NA) = 7.25X10⁻⁹

DEVICE TYPE: GP-27 GP AMP

MFG: ADI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1135-2 DATE CODE 8407



DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

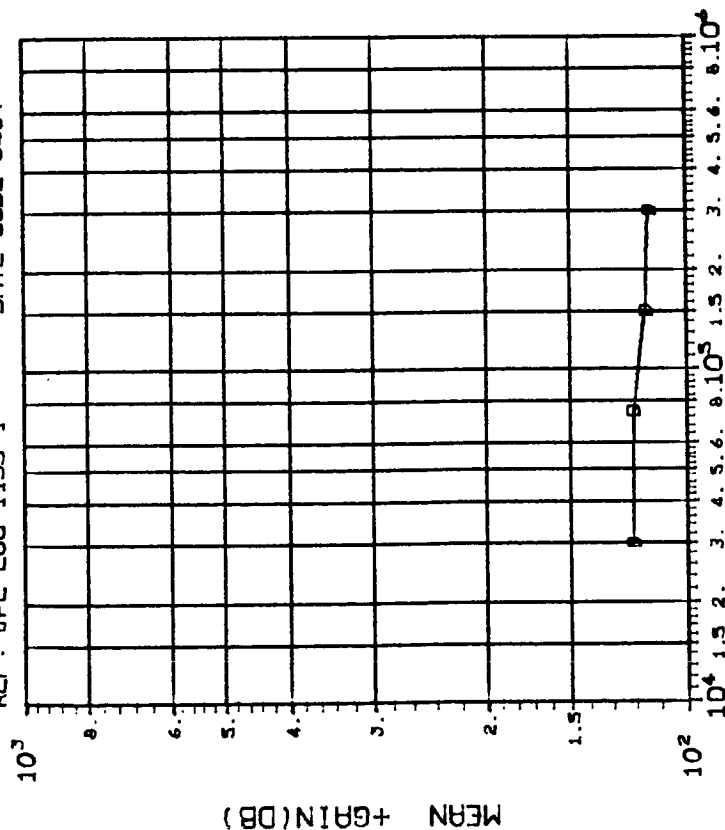
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	6.0E3 1.0E6 2.0E6
	509.4 608.2 368.7

INITIAL MEAN VALUE IB(NA) = 7.25X10⁻⁹

DEVICE TYPE: UP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1135-1 DATE CODE 8407



MEAN + GAIN(DB)

DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

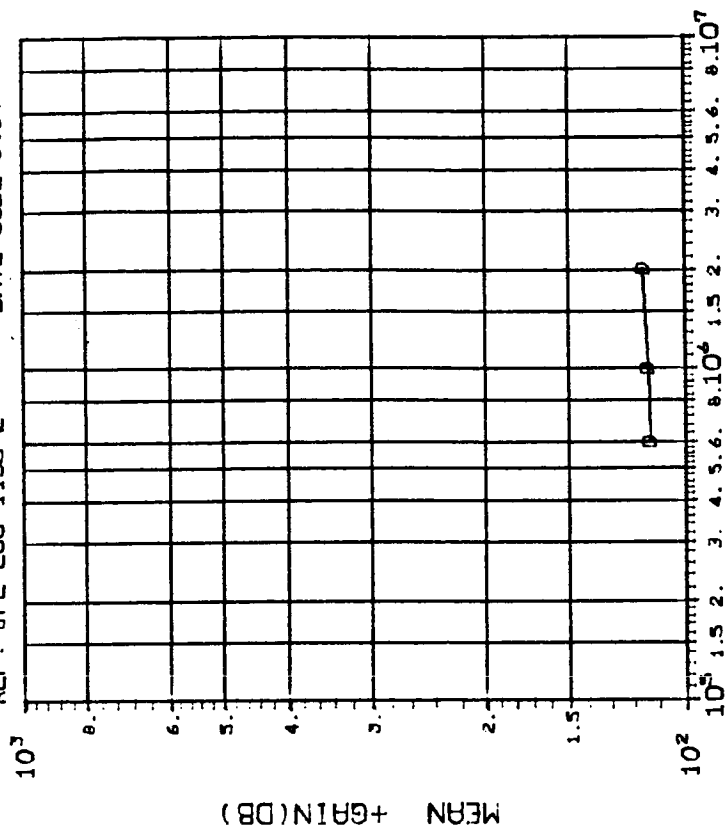
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	3.0E4 7.5E4 1.5E5 3.0E5
	.3910 .5789 2.954 3.404

INITIAL MEAN VALUE +GAIN(DB) = 1.23X10¹²

DEVICE TYPE: UP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1135-2 DATE CODE 8407



MEAN + GAIN(DB)

DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

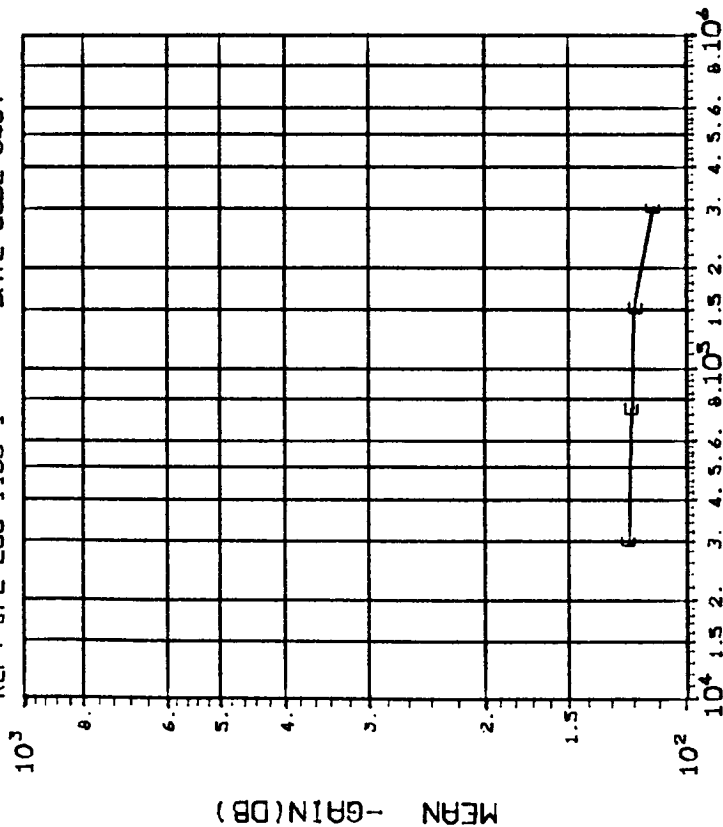
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	6.0E3 1.0E6 2.0E6
	1.433 .2017 .3718

INITIAL MEAN VALUE +GAIN(DB) = 1.23X10¹²

DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 09-05-85

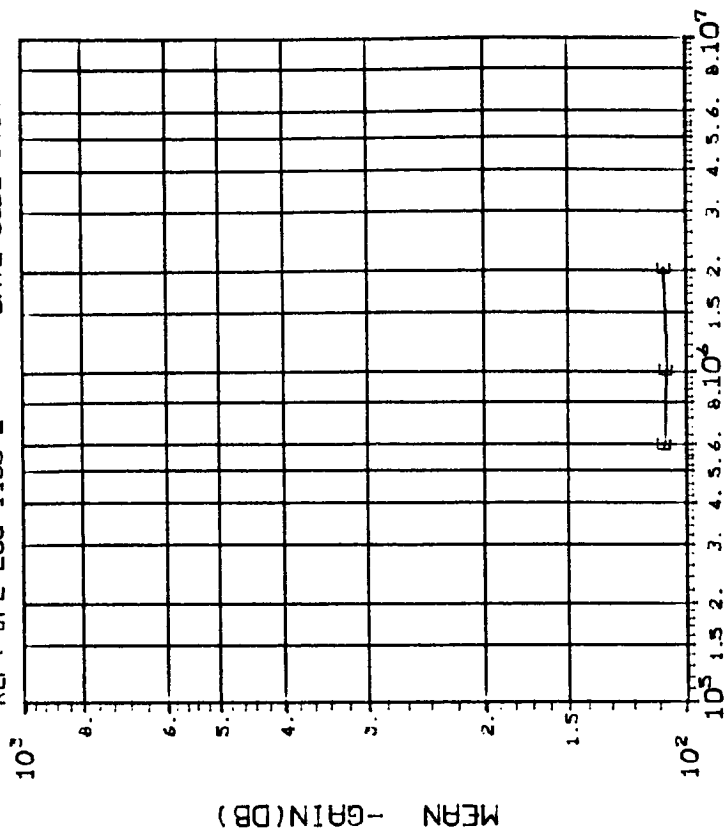
REF: JPL LOG 1135-1 DATE CODE 8407



DEVICE TYPE: OP-27 OP AMP

MFG: ADI 5 DEVICES TEST DATE 09-05-85

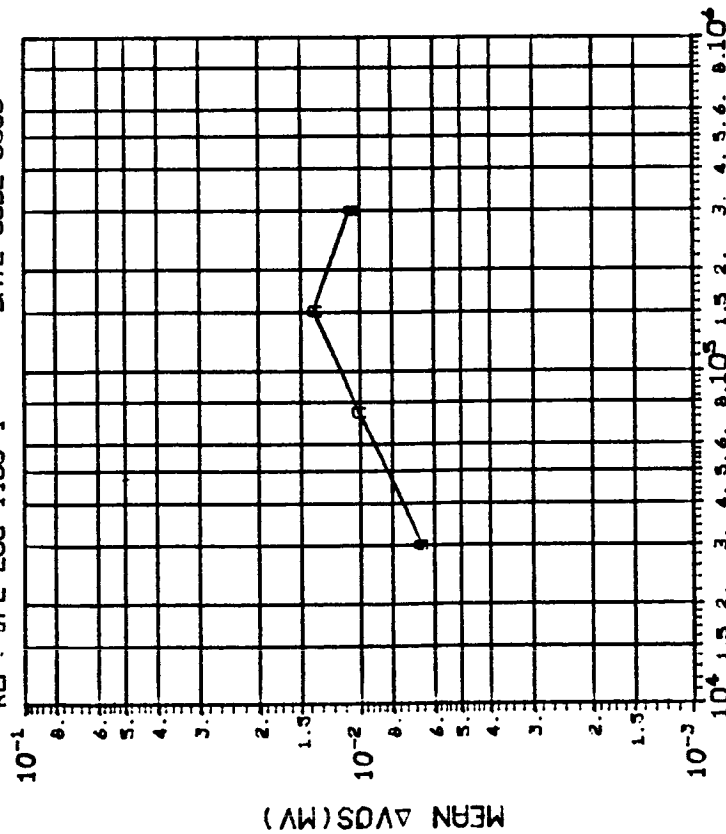
REF: JPL LOG 1135-2 DATE CODE 8407



DEVICE TYPE: OP-27 OP AMP

MFG: SUB 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1180-1 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

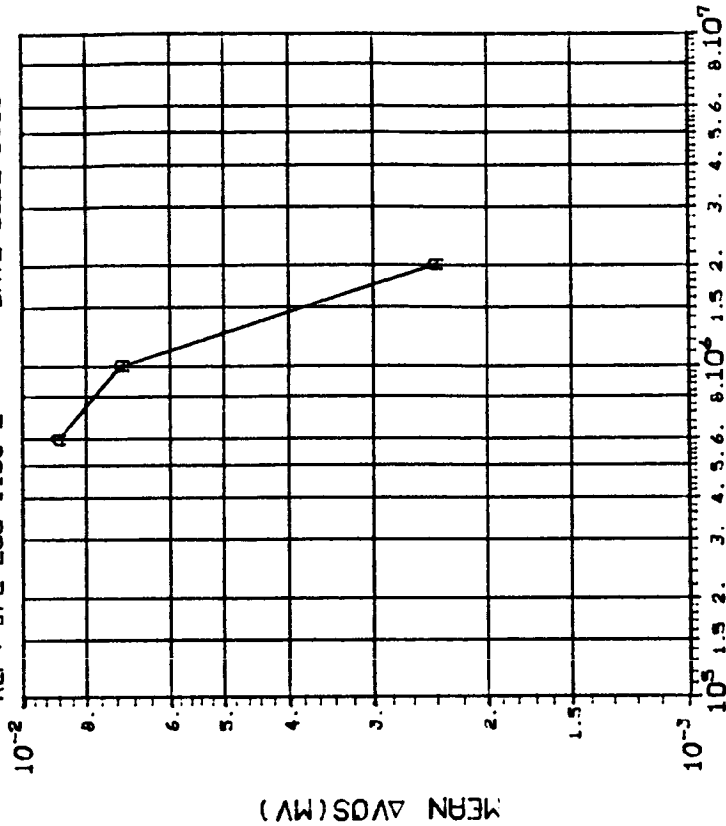
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, rads(Si)	
A	3.0E4 7.5E4 1.5E5 3.0E5	
	.0141 .0165 .0209 .0243	

INITIAL MEAN VALUE VOS(MV) = 1.28X10⁻³

DEVICE TYPE: OP-27 OP AMP

MFG: SUB 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1180-2 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

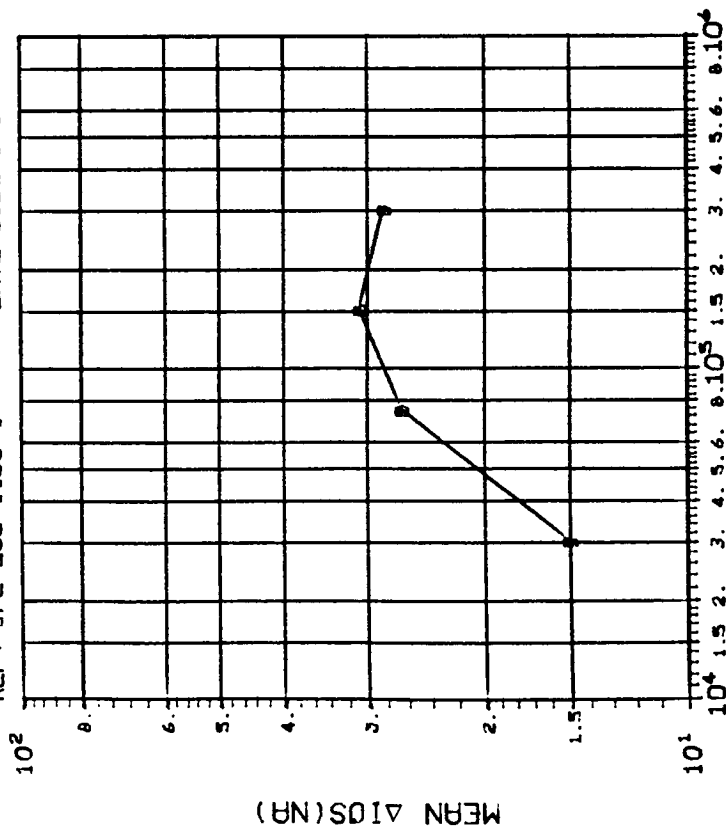
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, rads(Si)	
A	6.0E3 1.0E6 2.0E6	
	.0208 .0164 .0157	

INITIAL MEAN VALUE VOS(MV) = 1.28X10⁻³

DEVICE TYPE: OP-27 OP AMP

MFG: BUB 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1180-1 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gammas

(2)ΔIOS(NA): VS DOSE

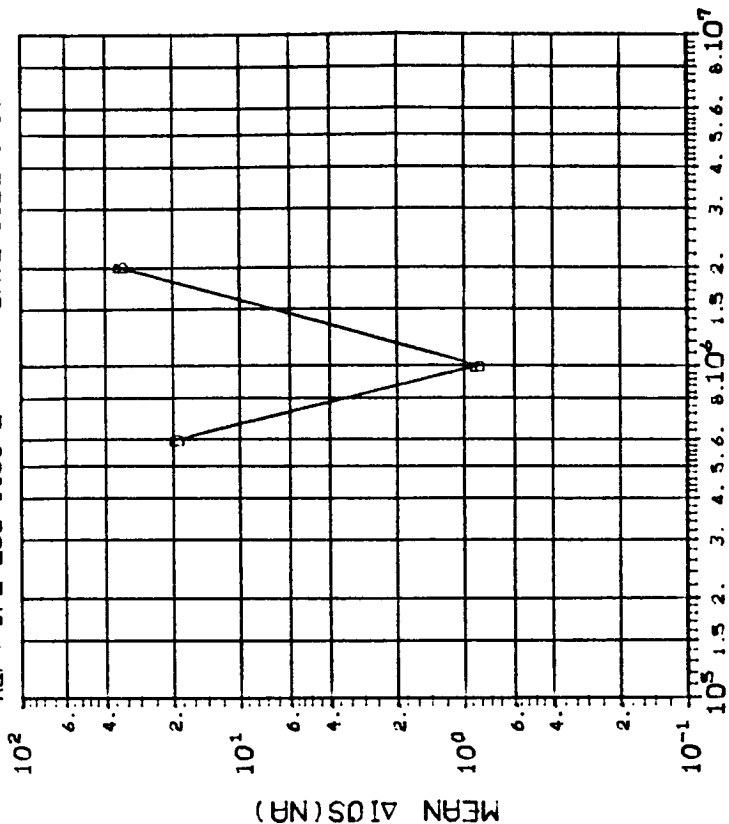
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 7.5E4 1.5E5 3.0E5
	22.69 29.30 32.65 43.96

INITIAL MEAN VALUE IOS(NA) = 1.09X10⁺¹

DEVICE TYPE: OP-27 OP AMP

MFG: BUB 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1180-2 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gammas

(2)ΔIOS(NA): VS DOSE

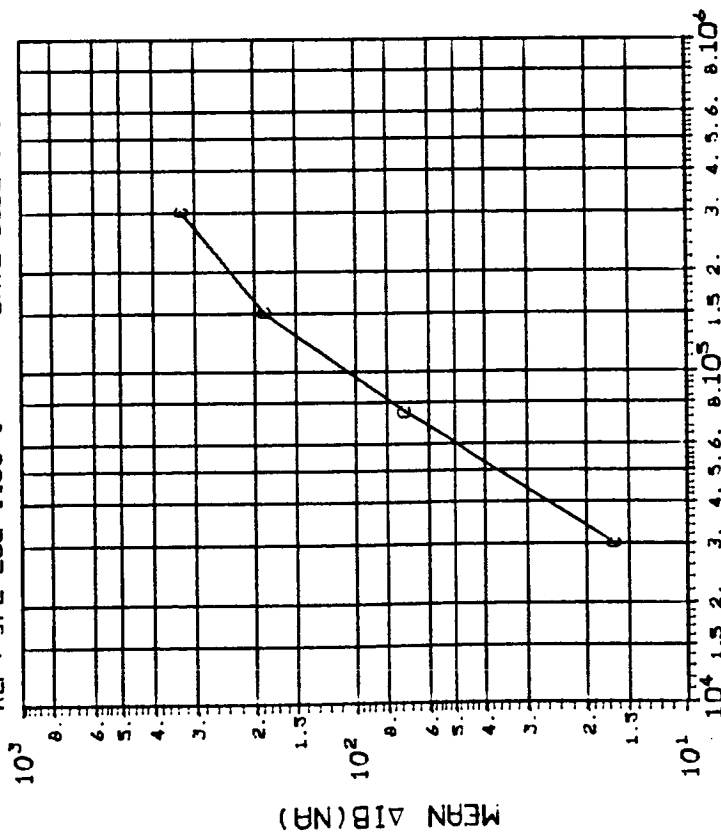
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	6.0E3 1.0E6 2.0E6
	61.48 103.1 170.6

INITIAL MEAN VALUE IOS(NA) = 1.09X10⁺¹

DEVICE TYPE: OP-27 OP AMP

MFG: BUB 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1180-1 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gamma

(3)ΔIB(NA): VS DOSE

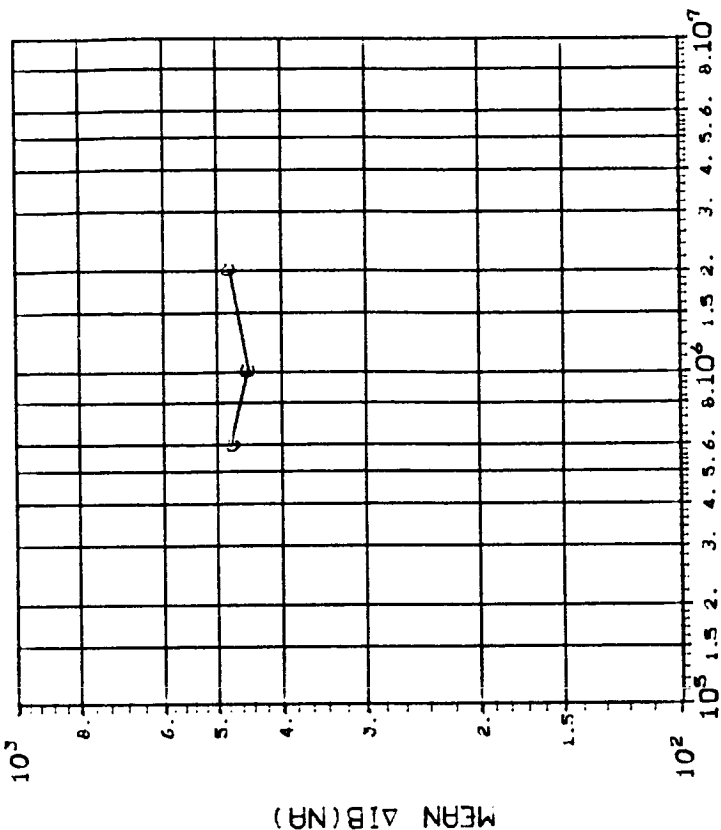
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
	10.25 110.1 339.7 620.5

INITIAL MEAN VALUE IB(NA) = 1.10X10⁺¹

DEVICE TYPE: OP-27 OP AMP

MFG: BUB 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1180-2 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gamma

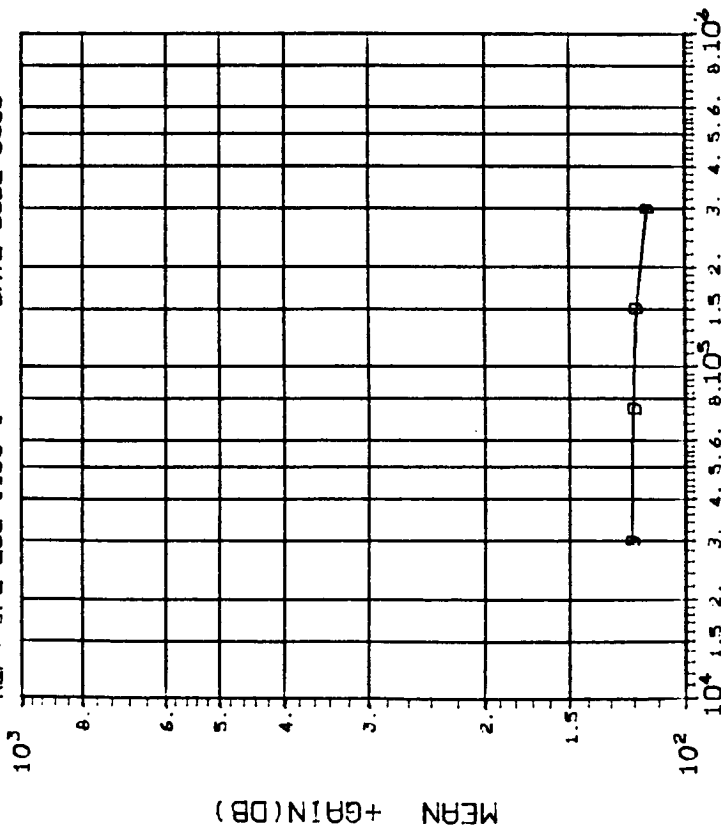
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	6.0E3 1.0E6 2.0E6
	669.0 747.0 559.4

INITIAL MEAN VALUE IB(NA) = 1.10X10⁺¹

DEVICE TYPE: OP-27 OP AMP

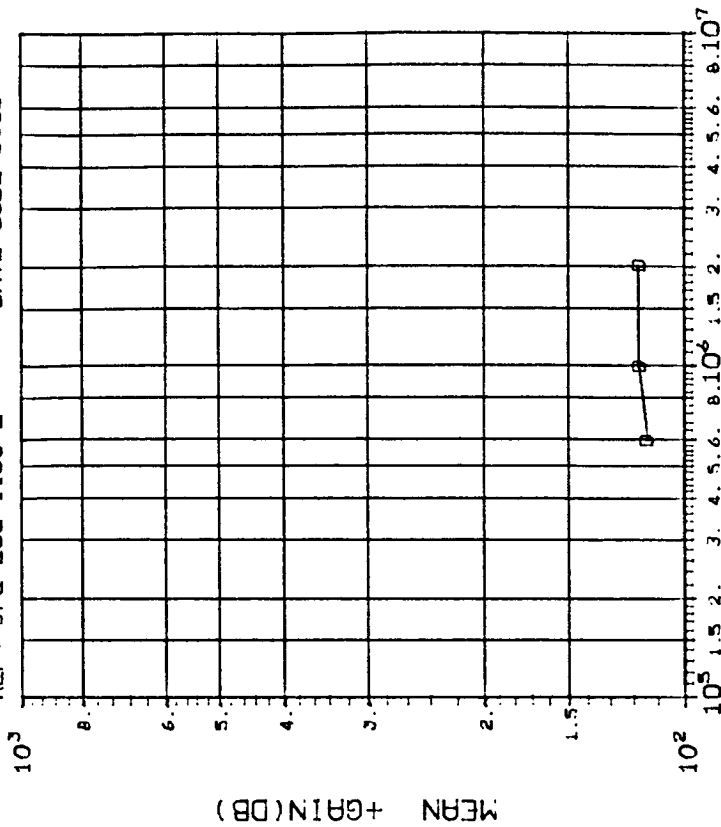
MFG: SUB 5 DEVICES TEST DATE 09-05-85
REF: JPL LOG 1180-1 DATE CODE 8503



5-796

DEVICE TYPE: OP-27 OP AMP

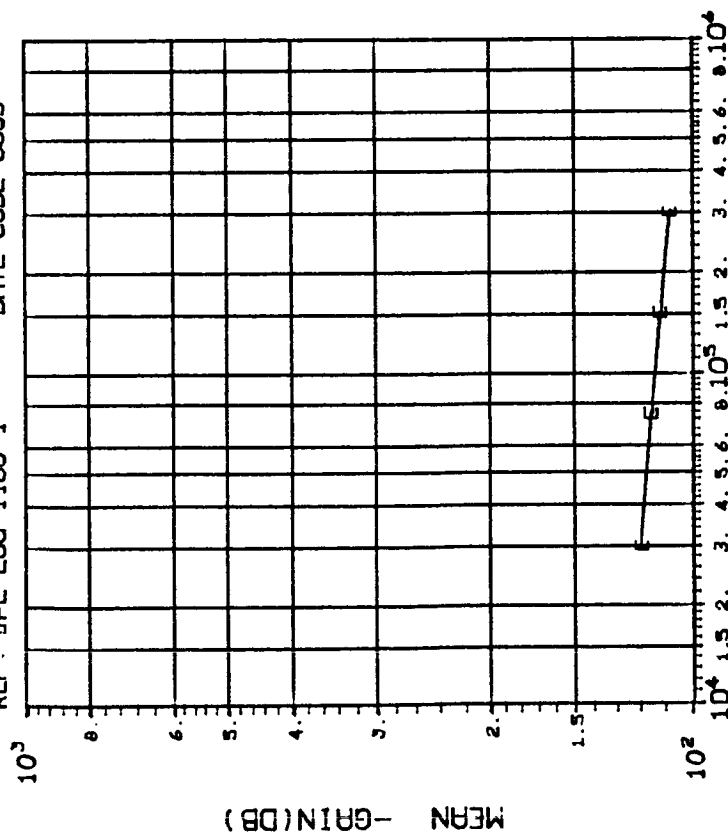
MFG: SUB 5 DEVICES TEST DATE 09-05-85
REF: JPL LOG 1180-2 DATE CODE 8503



DEVICE TYPE: OP-27 OP AMP

MFG: SUB 5 DEVICES TEST DATE 09-05-85

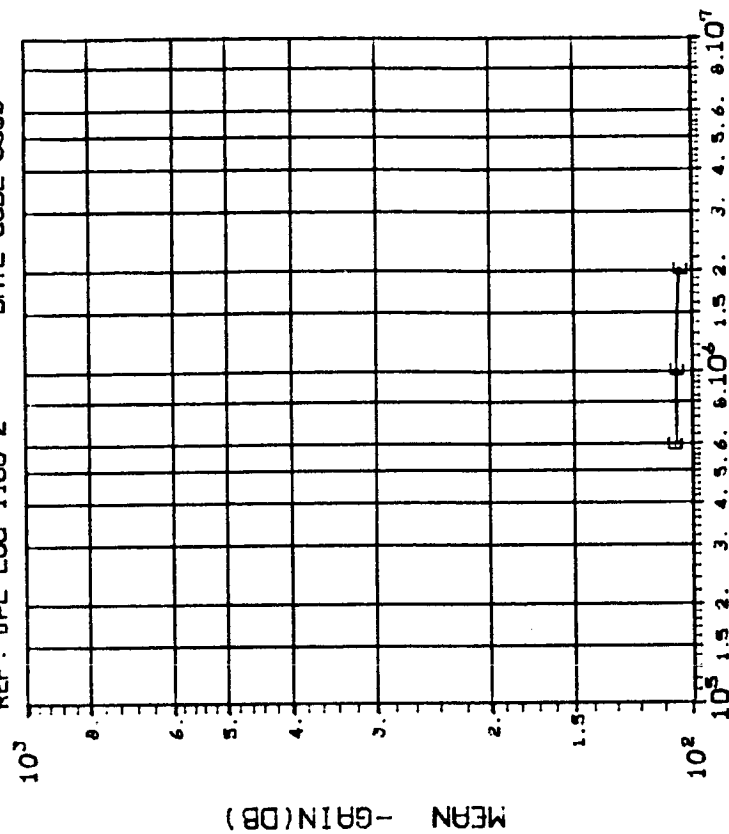
REF: JPL LOG 1180-1 DATE CODE 8503



DEVICE TYPE: OP-27 OP AMP

MFG: SUB 5 DEVICES TEST DATE 09-05-85

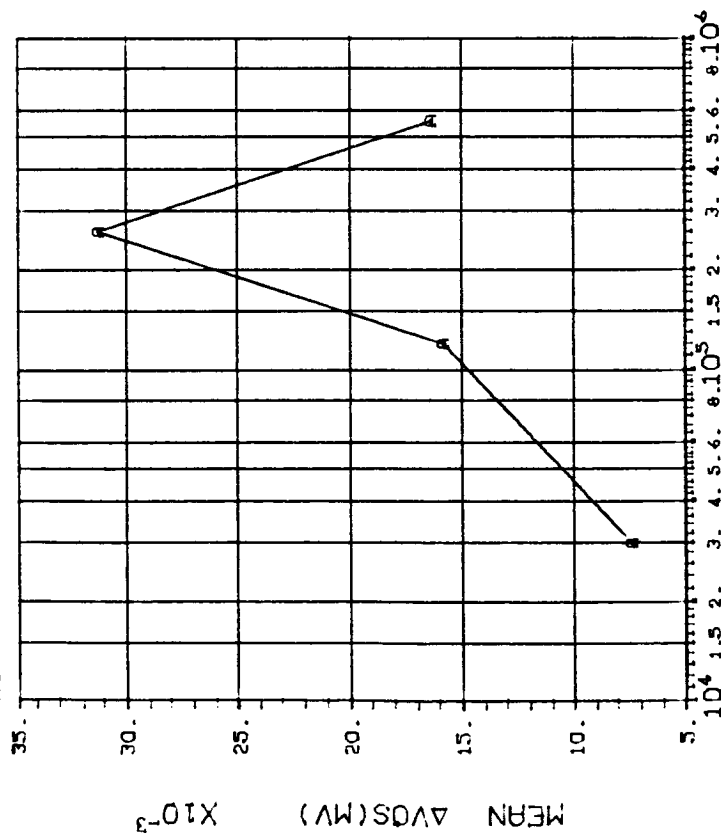
REF: JPL LOG 1180-2 DATE CODE 8503



DEVICE TYPE: 0P-27 0P AMP

MFG: BUB 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1181 DATE CODE 8503



DOSE, rads(Si) Ca⁶⁰ Gammas

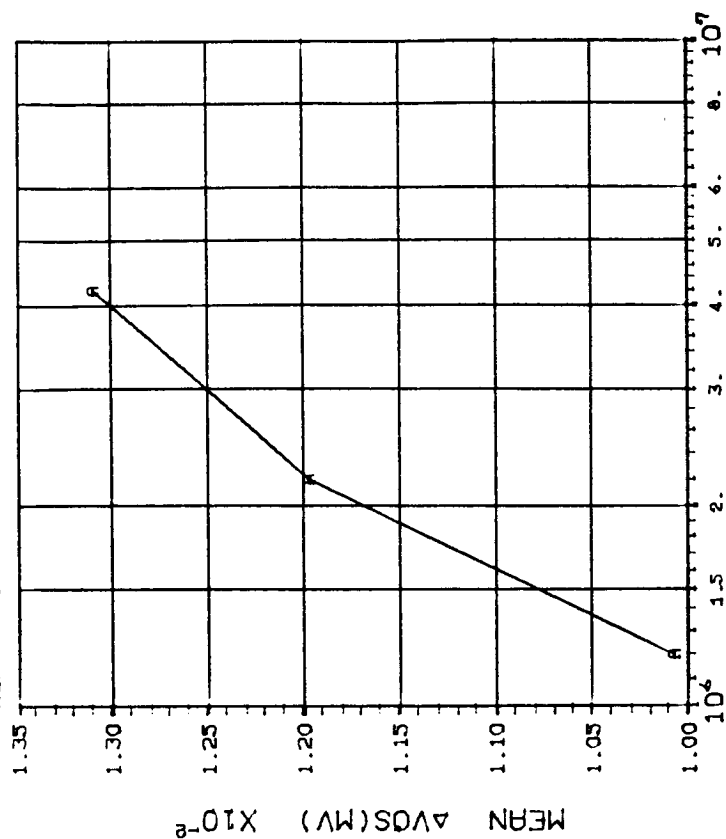
(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, rads(Si)	
A	3.0E4 1.2E5 2.6E5 5.6E5	.0061 .0233 .0499 .0207

DEVICE TYPE: 0P-27 0P AMP

MFG: BUB 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1181 DATE CODE 8503



DOSE, rads(Si) Ca⁶⁰ Gammas

(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, rads(Si)	
A	1.2E6 2.2E6 4.2E6	.0056 .0095 .0077

DEVICE TYPE: JP--27 OP AMP

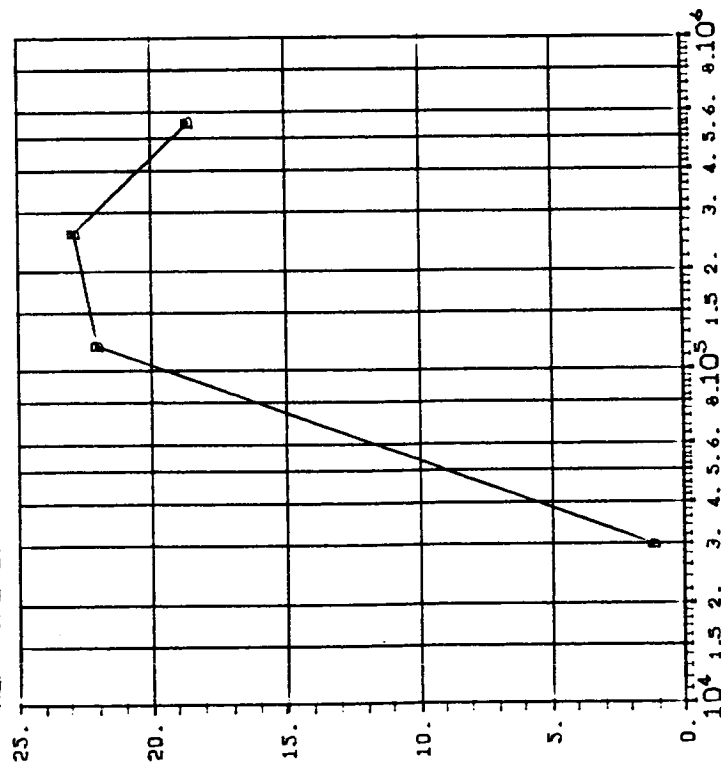
MFG: BUB

5 DEVICES

TEST DATE 09-05-85

REF: JPL LOG 1181

DATE CODE 8503



DOSE, rads(Si) Ca⁶⁰ Gammas

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, rads(Si)
B	3.0E4 1.2E5 2.6E5 5.6E5
B	1.156 26.66 27.25 16.88

DEVICE TYPE: JP--27 OP AMP

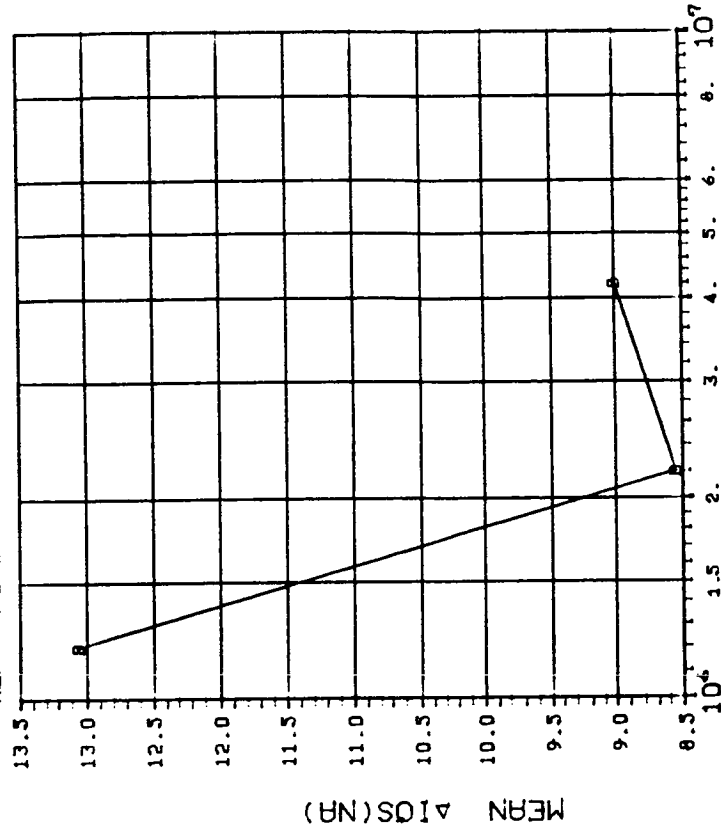
MFG: BUB

5 DEVICES

TEST DATE 09-05-85

REF: JPL LOG 1181

DATE CODE 8503



DOSE, rads(Si) Ca⁶⁰ Gammas

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, rads(Si)
B	1.2E6 2.2E6 4.2E6
B	7.225 3.279 3.199

DEVICE TYPE: OP-27 OP AMP
 MFG: BUB 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1181 DATE CODE 8503

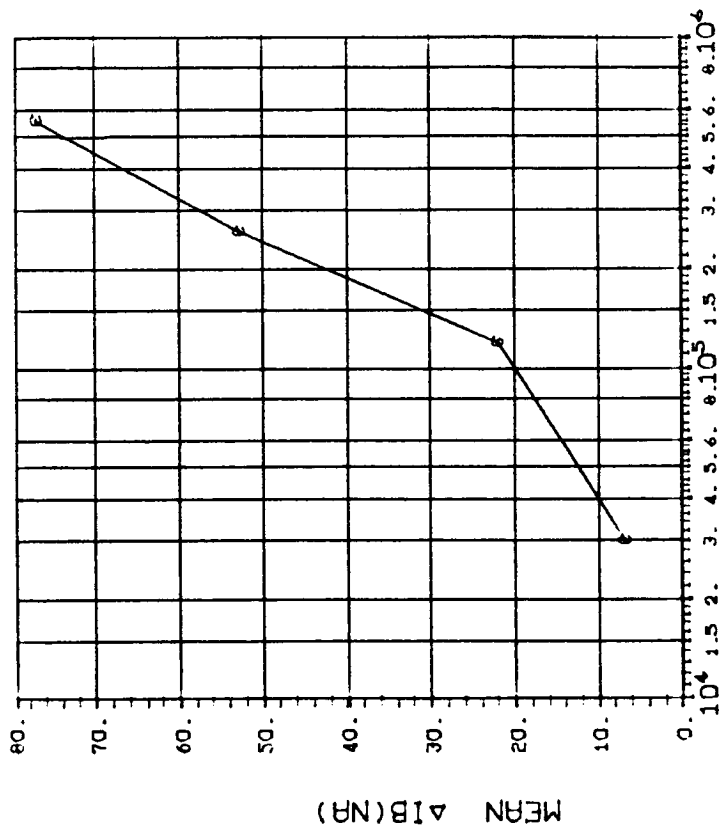
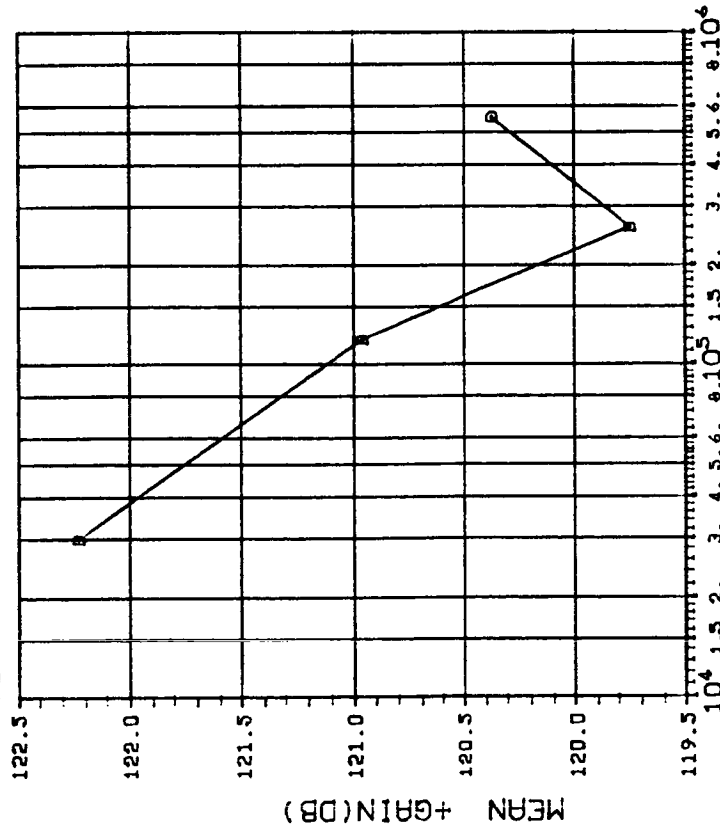


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 1.2E3 2.6E3 5.6E3
	0.832 28.30 70.92 90.94

DEVICE TYPE: OP-27 OP AMP

MFG: SUB 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1181 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

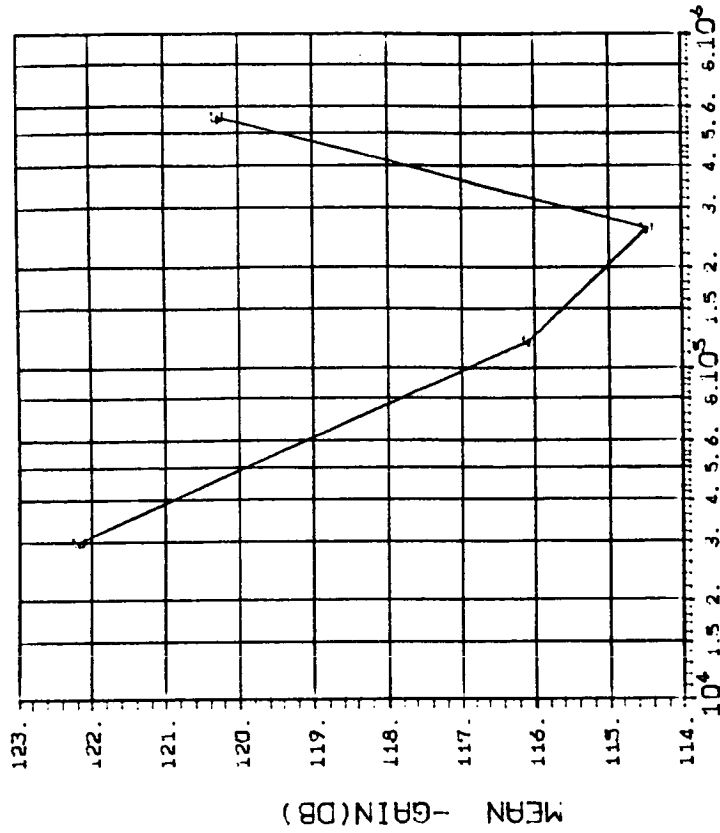
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
D	10.0	1.309 .9694 2.352 .3012

INITIAL MEAN VALUE +GAIN(DB) = 1.25X10⁻²

DEVICE TYPE: OP-27 OP AMP

MFG: SUB 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1181 DATE CODE 8503



DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(10MA LOAD,-10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
E	10.0	2.426 7.295 8.910 1.603

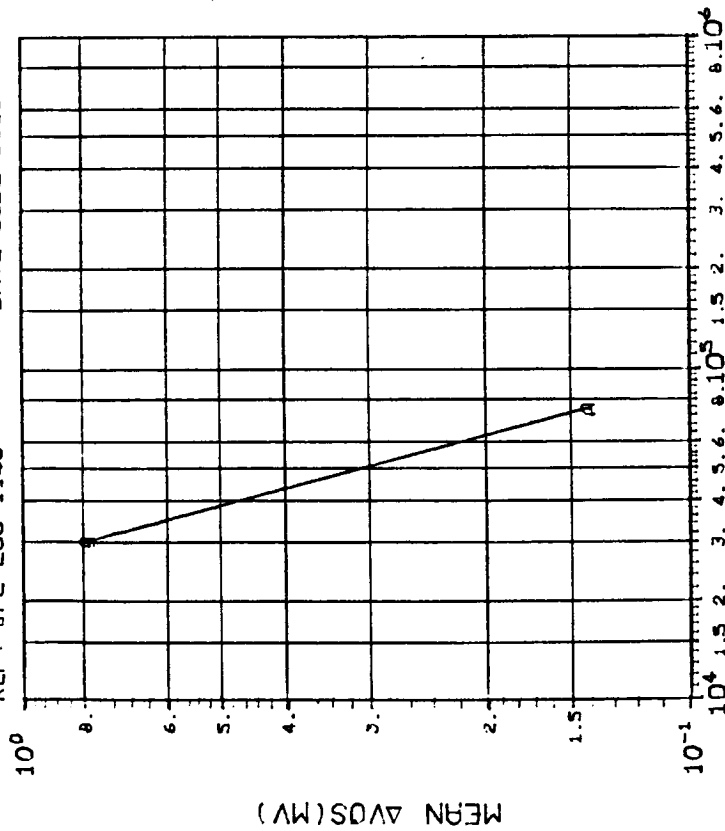
INITIAL MEAN VALUE -GAIN(DB) = 1.24X10⁻²

DEVICE TYPE: UP-27 OP AMP

MFG: LTC 5 DEVICES

TEST DATE 09-05-85

REF: JPL LOG 1140 DATE CODE 8518

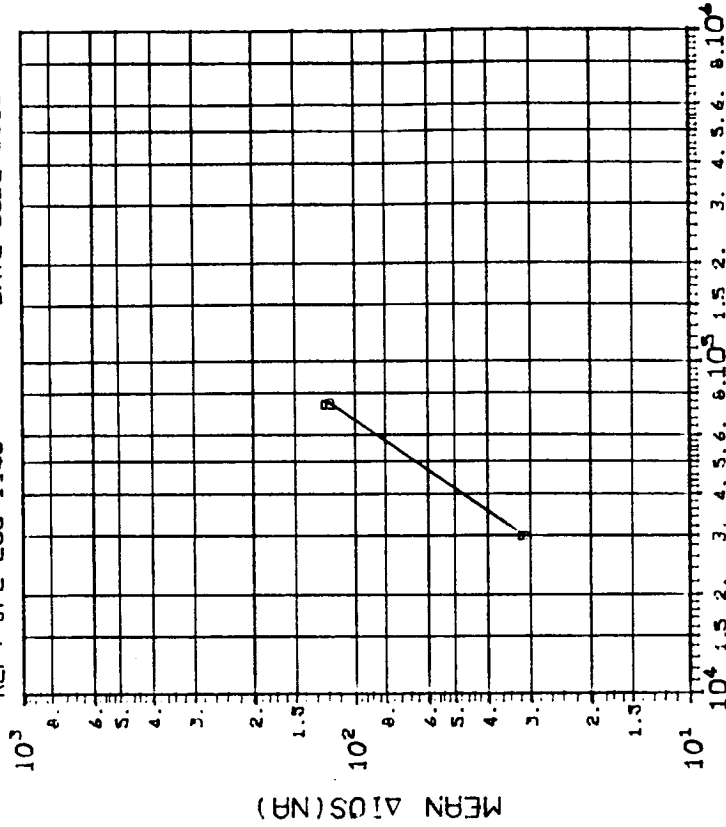


DEVICE TYPE: UP-27 OP AMP

MFG: LTC 5 DEVICES

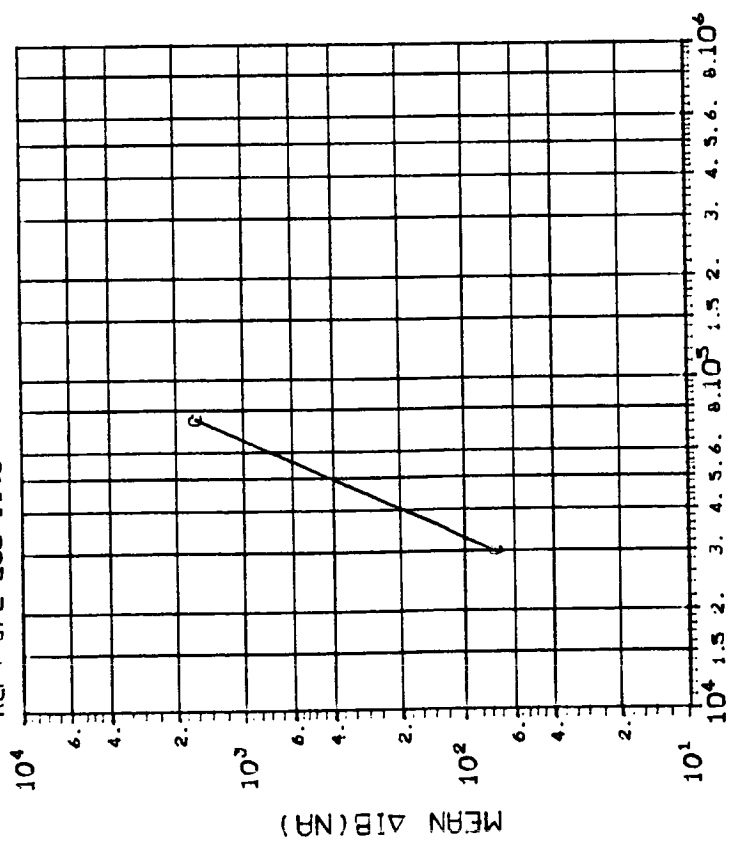
TEST DATE 09-05-85

REF: JPL LOG 1140 DATE CODE 8518



DEVICE TYPE: OP-27 OP AMP

MFG: LTC 5 DEVICES TEST DATE 09-03-85
REF: JPL LOG 1140 DATE CODE 8518



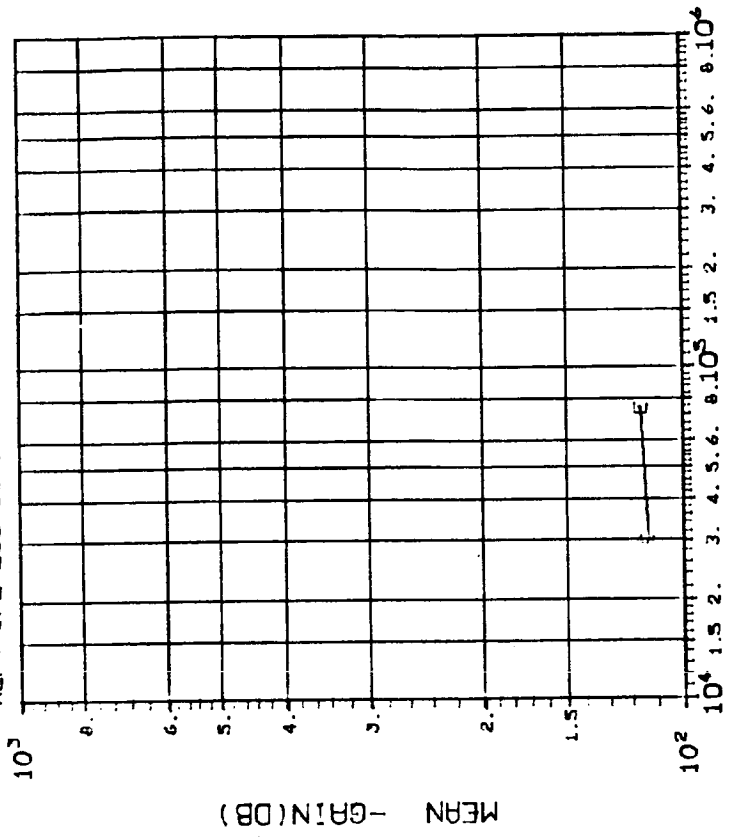
DOSE, rads(Si) Co⁶⁰ Gammas
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
	41.09 1360. **** ****

INITIAL MEAN VALUE IB(NA) = $1.37 \times 10^{+1}$

DEVICE TYPE: OP-27 OP AMP

MFG: LTC 5 DEVICES TEST DATE 09-03-85
REF: JPL LOG 1140 DATE CODE 8518



DOSE, rads(Si) Co⁶⁰ Gammas
(3)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

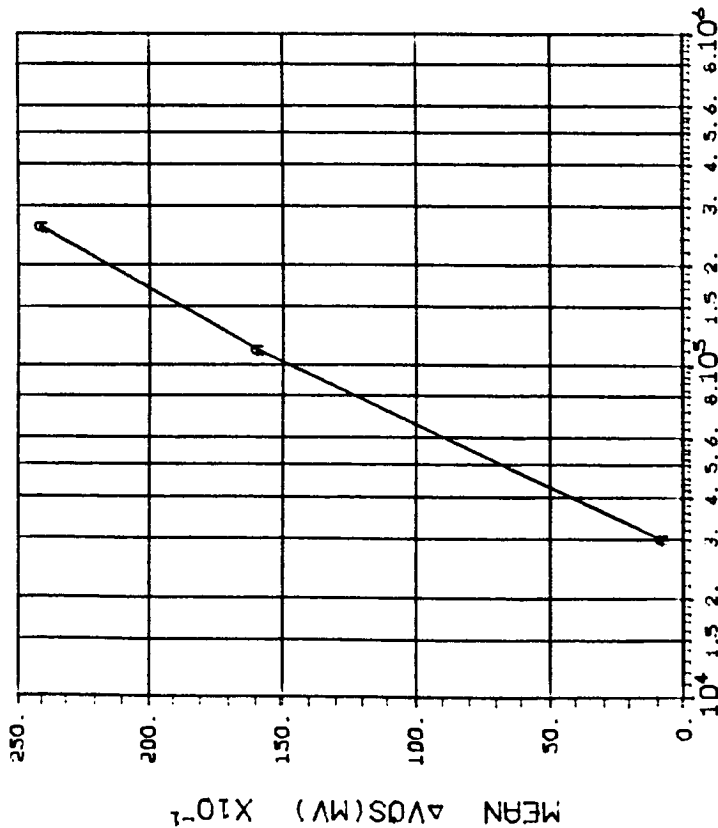
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	3.0E4 7.5E4 1.5E5 3.0E5
	5.196 6.094 **** ****

INITIAL MEAN VALUE -GAIN(DB) = $1.43 \times 10^{+2}$

DEVICE TYPE: OP-27 OP AMP

MFG: LTC 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1141 DATE CODE 8518



DOSE, rads(Si) Co⁶⁰ Gammas

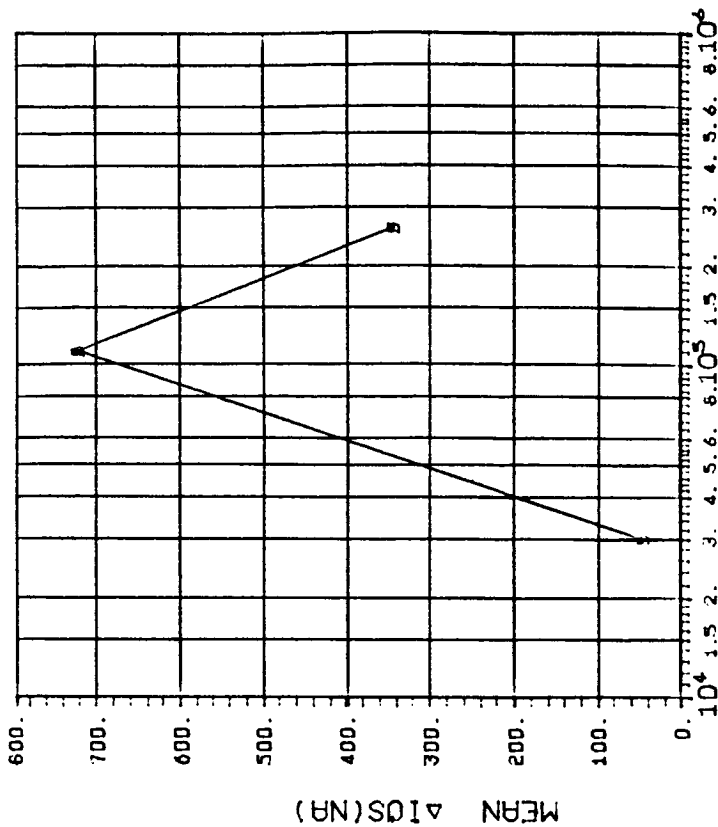
(1)ΔVDS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 1.1E5 2.6E5
	.2271 9.247 13.76

DEVICE TYPE: OP-27 OP AMP

MFG: LTC 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1141 DATE CODE 8518

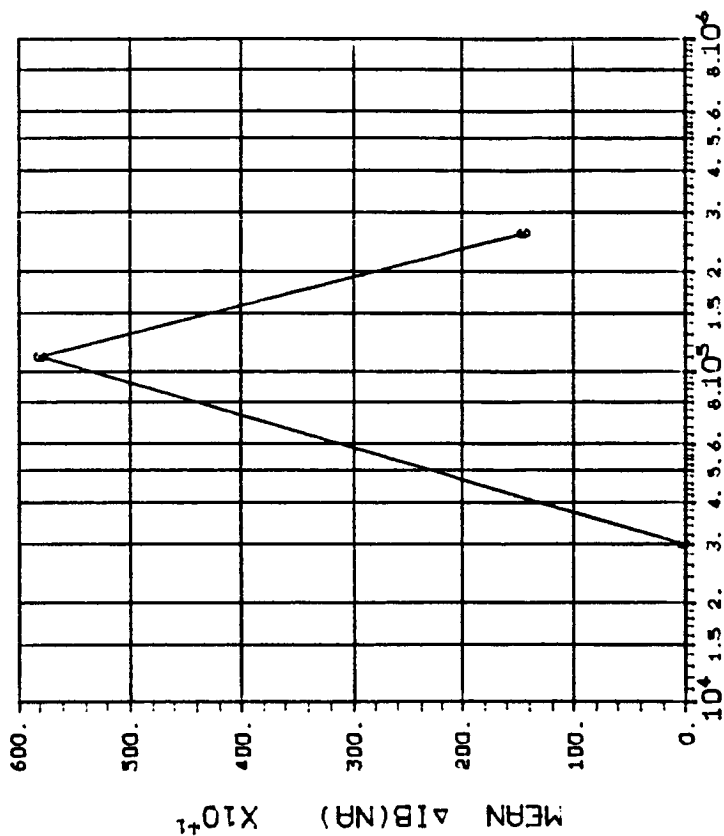


DOSE, rads(Si) Co⁶⁰ Gammas

(2)ΔIOS(MA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 1.1E5 2.6E5
	22.98 888.9 107.6

DEVICE TYPE: OP-27 OP AMP
 MFG: LTC 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1141 DATE CODE 8518



DOSE, rads(Si) Co⁶⁰ Gammas

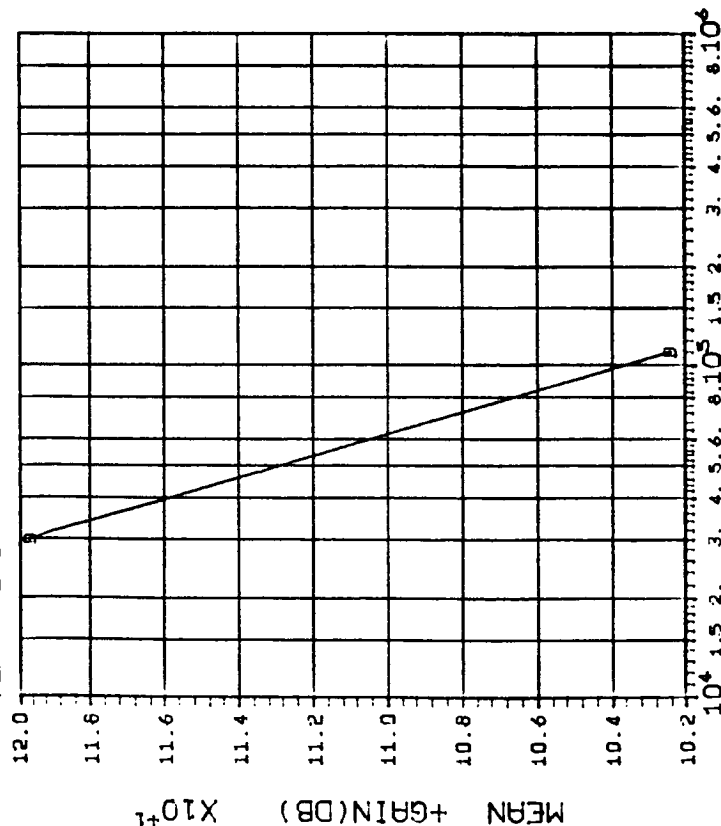
(3)ΔIB(NA): VSDOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 1.1E5 2.6E5
	12.07 5196. 760.2

DEVICE TYPE: UP-27 OP AMP

MFG: LTC 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1141 DATE CODE 8518



DEVICE TYPE: UP-27 OP AMP

MFG: LTC 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1141 DATE CODE 8518

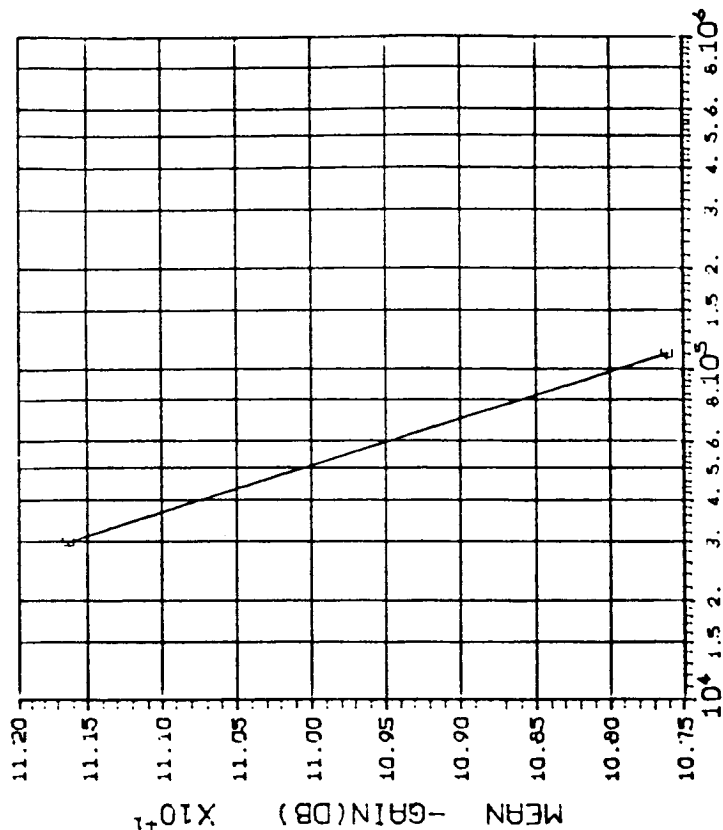


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
D	10.0	1.135 7.129 *****

INITIAL MEAN VALUE +GAIN(DB) = 1.45X10⁺²

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
E	10.0	2.593 7.260 *****

INITIAL MEAN VALUE -GAIN(DB) = 1.34X10⁺²

DEVICE TYPE: OP-27 OP AMP

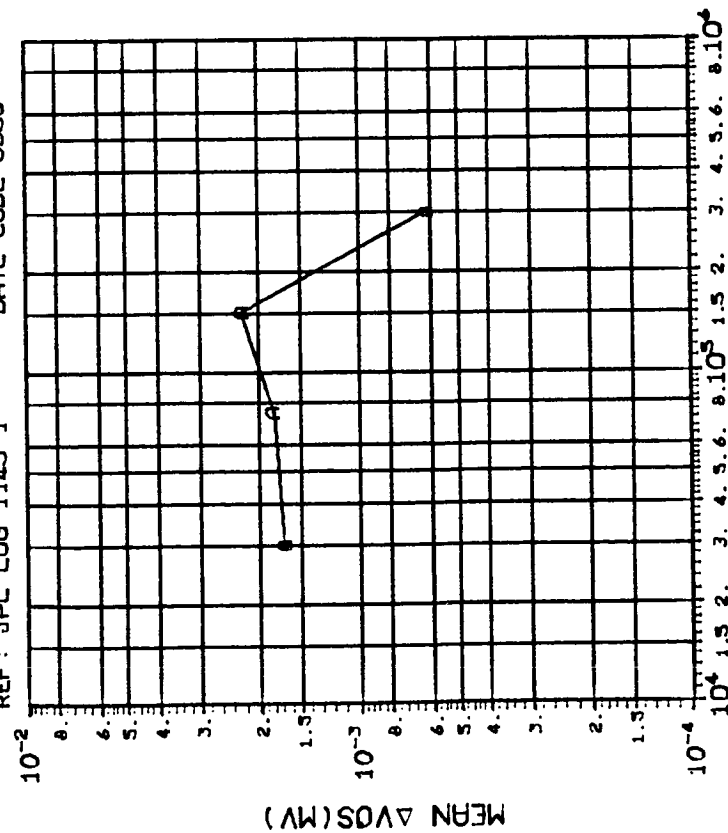
MFG: MPS

4 DEVICES

TEST DATE 09-05-85

REF: JPL LOG 1145-1

DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 7.5E4 1.5E5 3.0E5
	.0113 .0109 .0192 .0242

INITIAL MEAN VALUE VOS(MV) = 7.20X10⁻⁴

DEVICE TYPE: OP-27 OP AMP

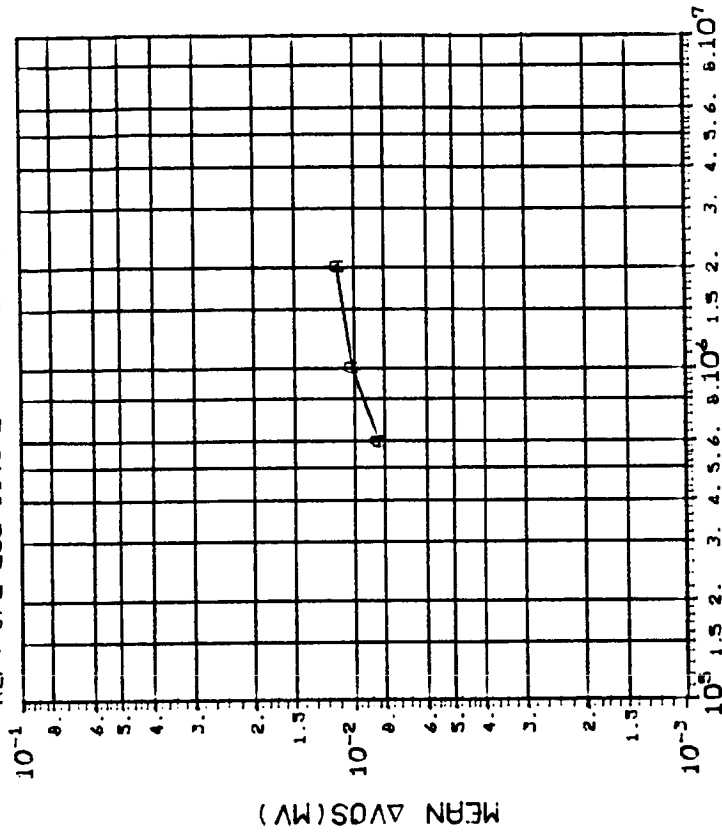
MFG: MPS

4 DEVICES

TEST DATE 09-05-85

REF: JPL LOG 1145-2

DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

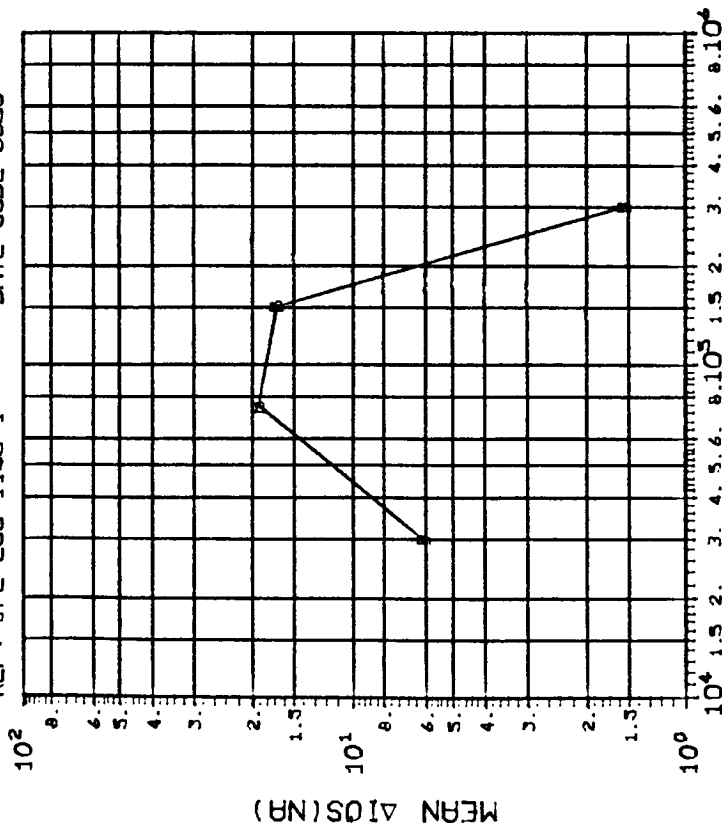
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	6.0E3 1.0E6 2.0E6
	.0257 .0316 .0286

INITIAL MEAN VALUE VOS(MV) = 7.20X10⁻⁴

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1145-1 DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas

(2)ΔIOS(NA): VS DOSE

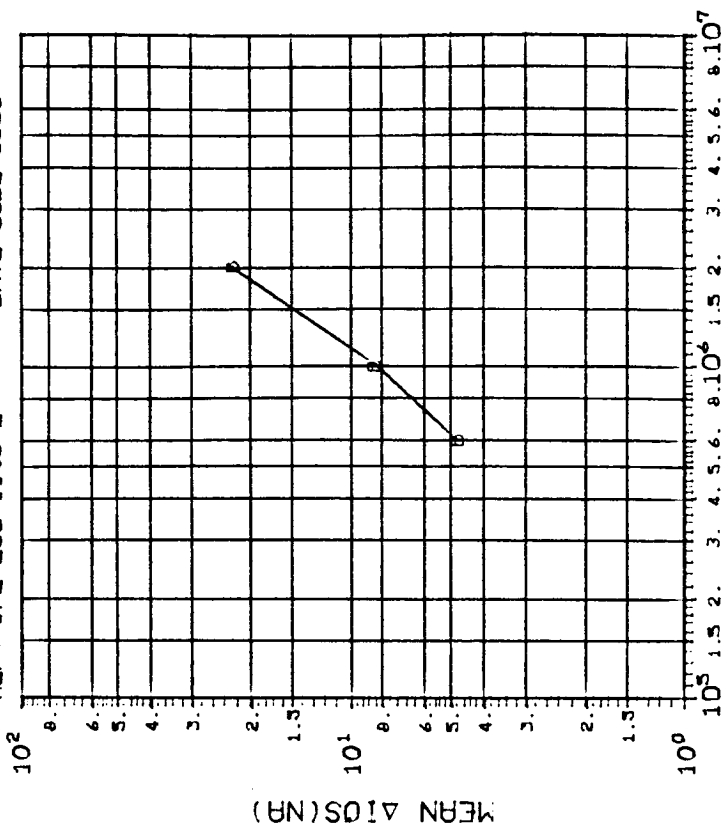
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 7.5E4 1.5E5 3.0E5
	5.794 10.23 10.79 34.72

INITIAL MEAN VALUE IOS(NA) = 3.87X10⁻⁹

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1145-2 DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas

(2)ΔIOS(NA): VS DOSE

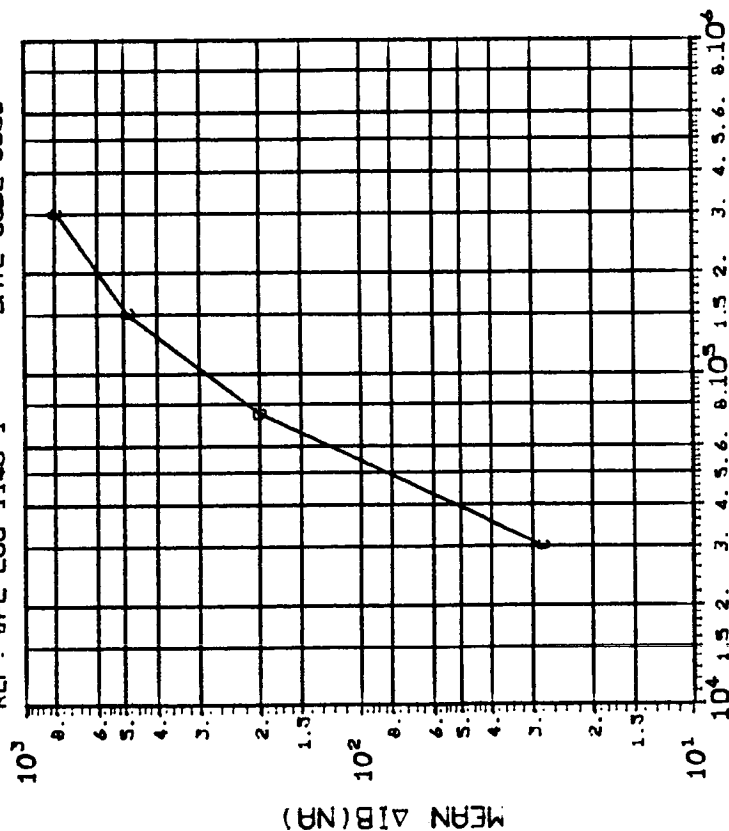
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	6.0E5 1.0E6 2.0E6
	75.98 137.1 127.0

INITIAL MEAN VALUE IOS(NA) = 3.87X10⁻⁹

DEVICE TYPE: UP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1145-1 DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

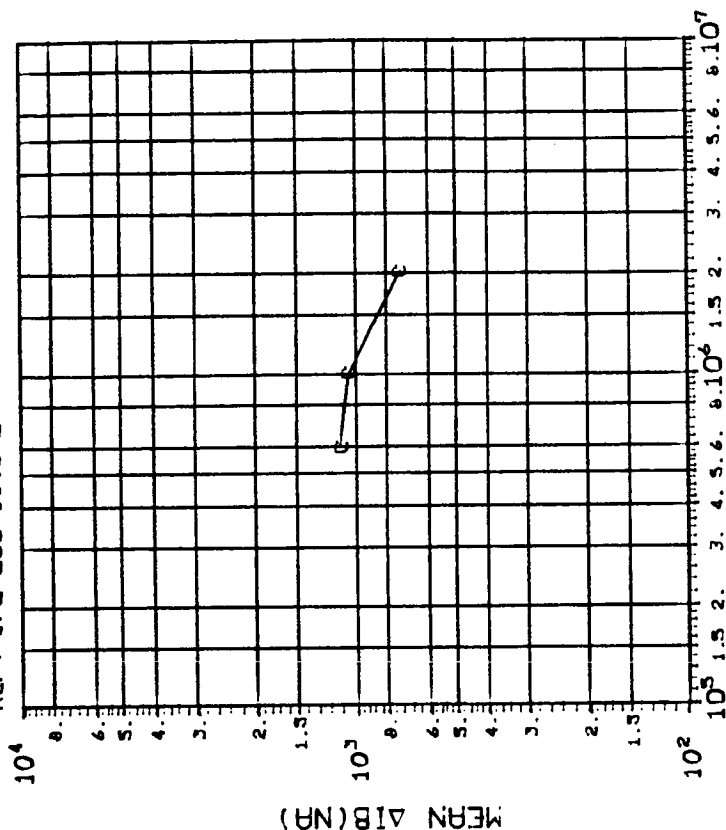
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
	16.49 69.44 87.44 107.1

INITIAL MEAN VALUE IB(NA) = 1.52X10⁺¹

DEVICE TYPE: UP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1145-2 DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	6.0E3 1.0E6 2.0E6
	139.3 153.0 222.6

INITIAL MEAN VALUE IB(NA) = 1.52X10⁺¹

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1145-1 DATE CODE 8350

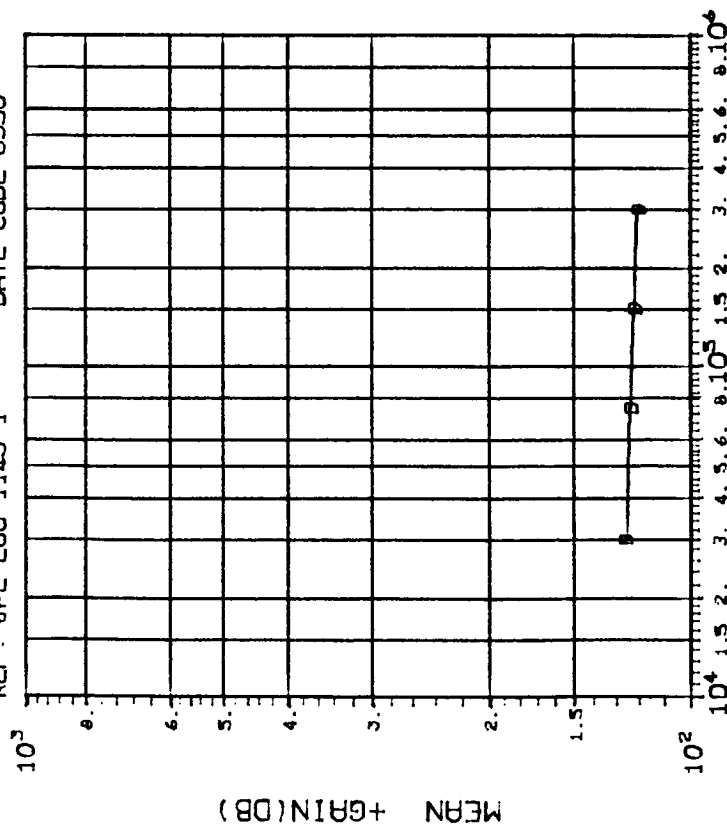


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	3.0E4 7.5E4 1.5E5 3.0E5
	1.054 1.319 1.501 1.406

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10²

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1145-2 DATE CODE 8350

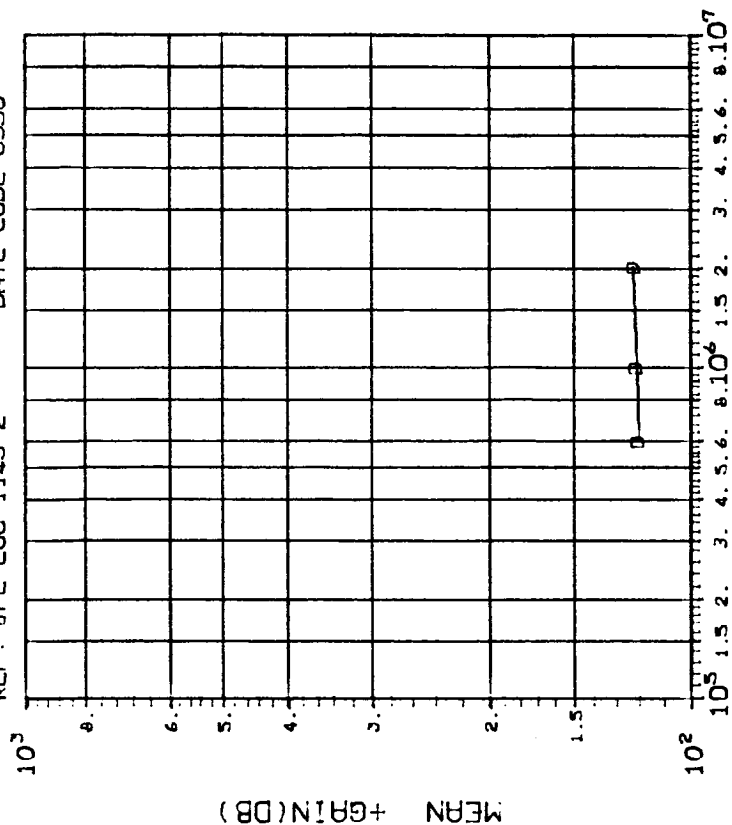


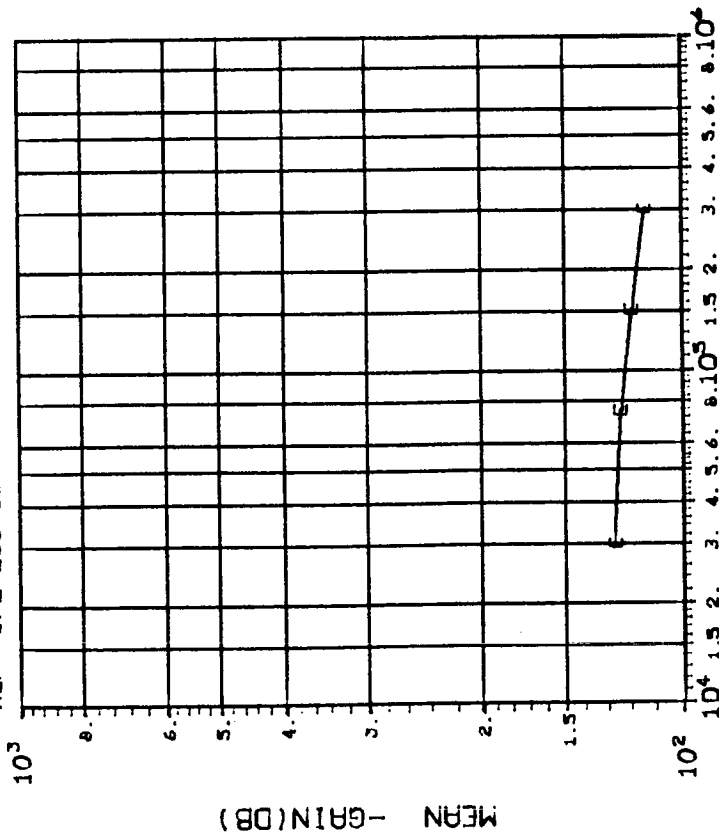
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	6.0E5 1.0E6 2.0E6
	1.082 1.141 1.179

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10²

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 09-05-85

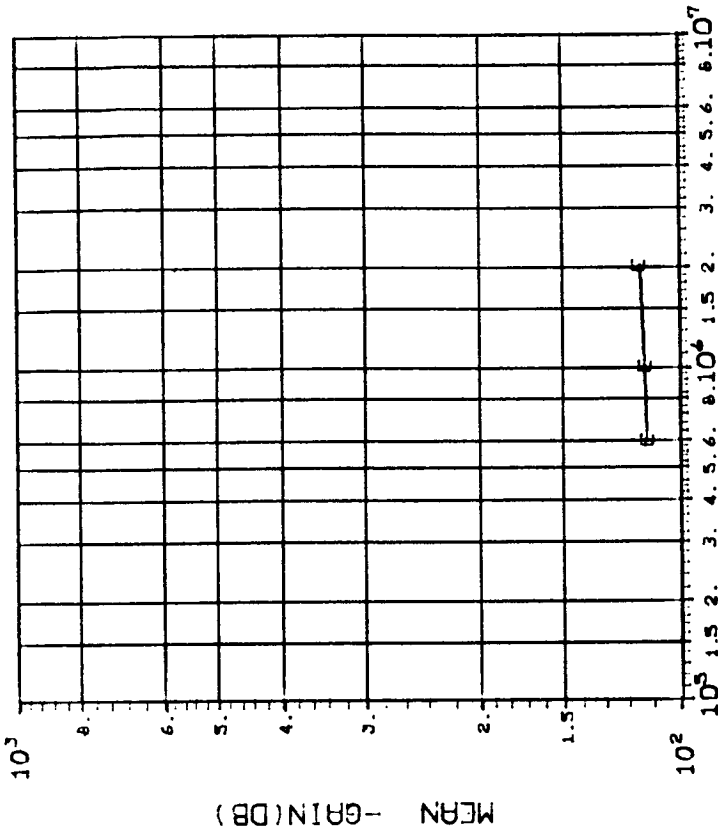
REF: JPL LOG 1145-1 DATE CODE 8350



DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1145-2 DATE CODE 8350



DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 11-13-85

REF: JPL LOG 1146-1 DATE CODE 8350

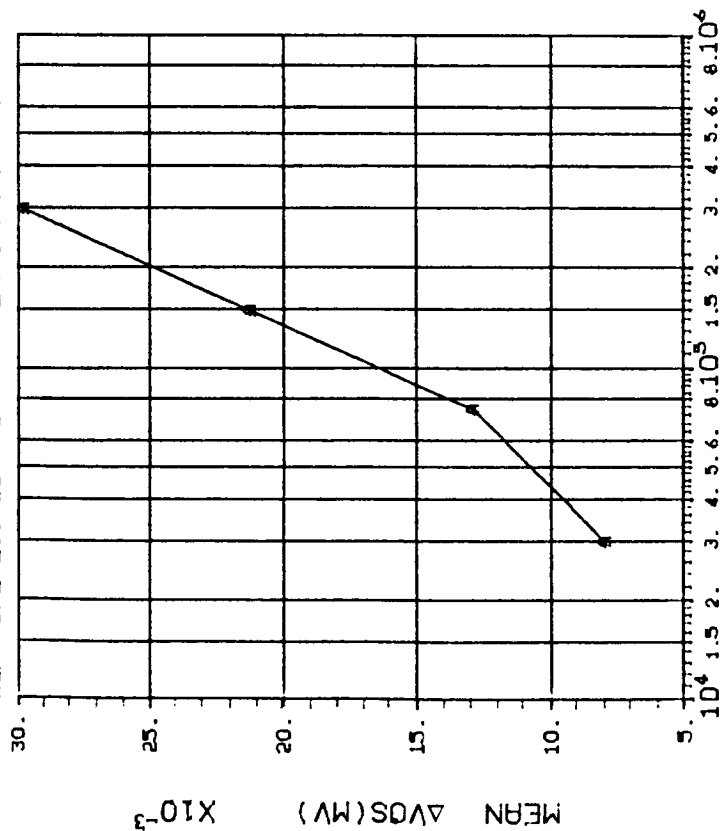


TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, rads(Si)
A	3.0E4 7.5E4 1.5E5 3.0E5
	.0083 .0125 .0151 .0240

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 11-13-85

REF: JPL LOG 1146-1 DATE CODE 8350

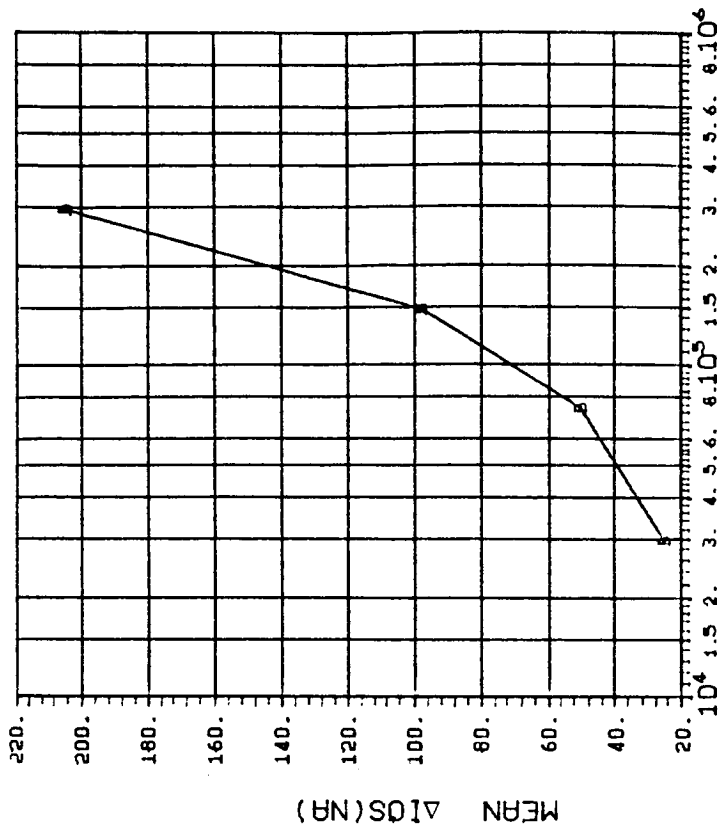
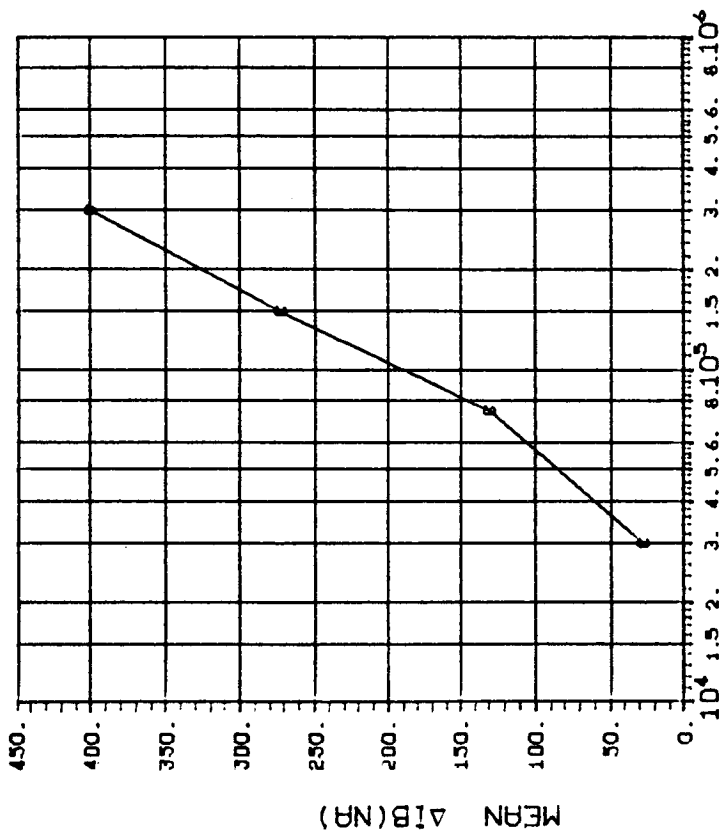


TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, rads(Si)
B	3.0E4 7.5E4 1.5E5 3.0E5
	15.64 30.73 58.88 133.5

DEVICE TYPE: JP-27 OP AMP
 MFG: MPS 4 DEVICES TEST DATE 11-13-85
 REF: JPL LOG 1146-1 DATE CODE 8350



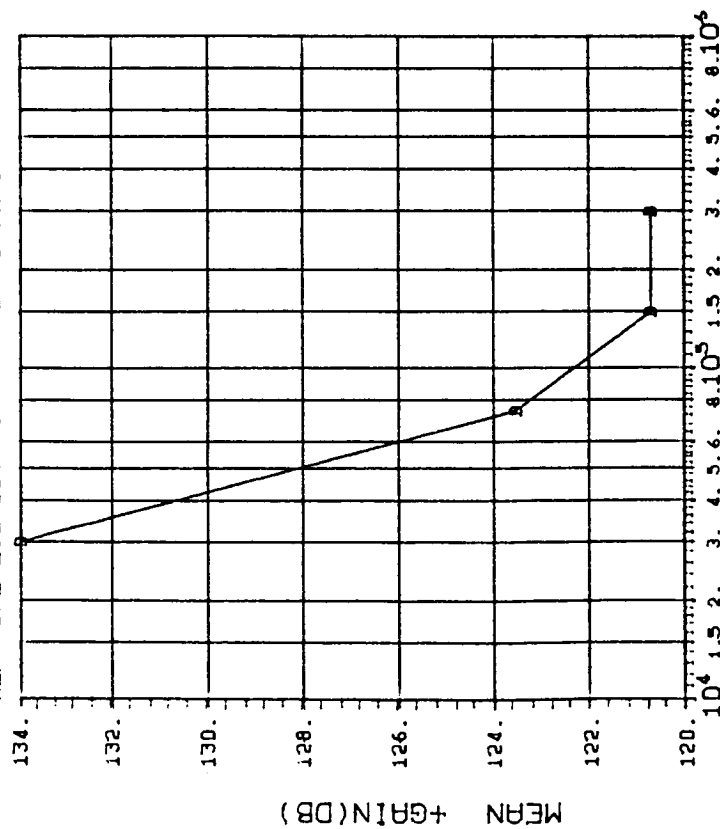
DOSE, rads(Si) Co⁶⁰ Gammas
 (3)ΔIB(NR): VSDOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
	20.58 29.93 91.01 136.7

DEVICE TYPE: UP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 11-13-85

REF: JPL LOG 1146-1 DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas

(41)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

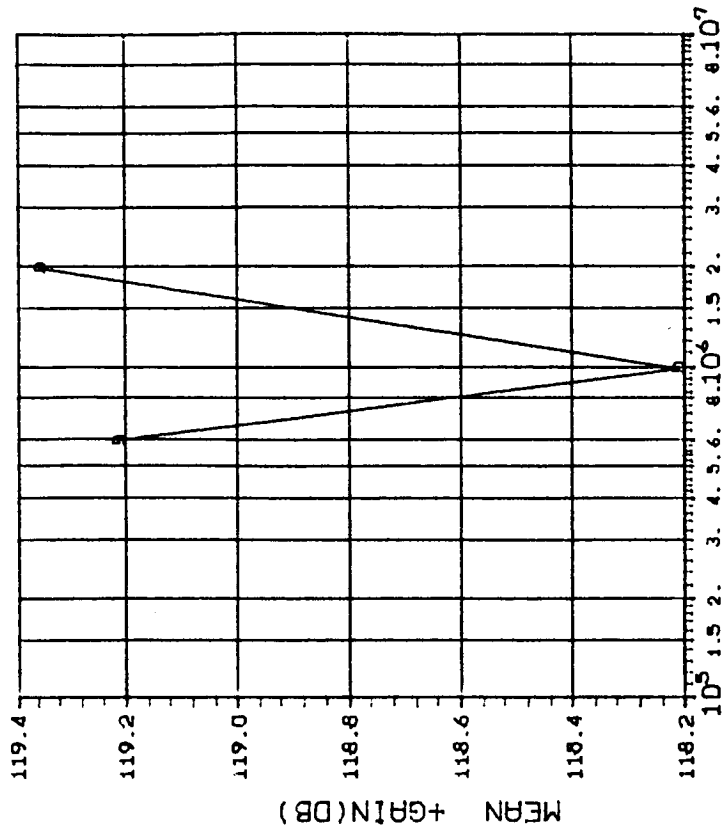
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
D	***	.0000 7.048 12.97 12.97

INITIAL MEAN VALUE +GAIN(DB) = 1.31X10¹²

DEVICE TYPE: UP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 11-13-85

REF: JPL LOG 1146-2 DATE CODE 8350



DOSE, rads(Si) Co⁶⁰ Gammas

(41)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

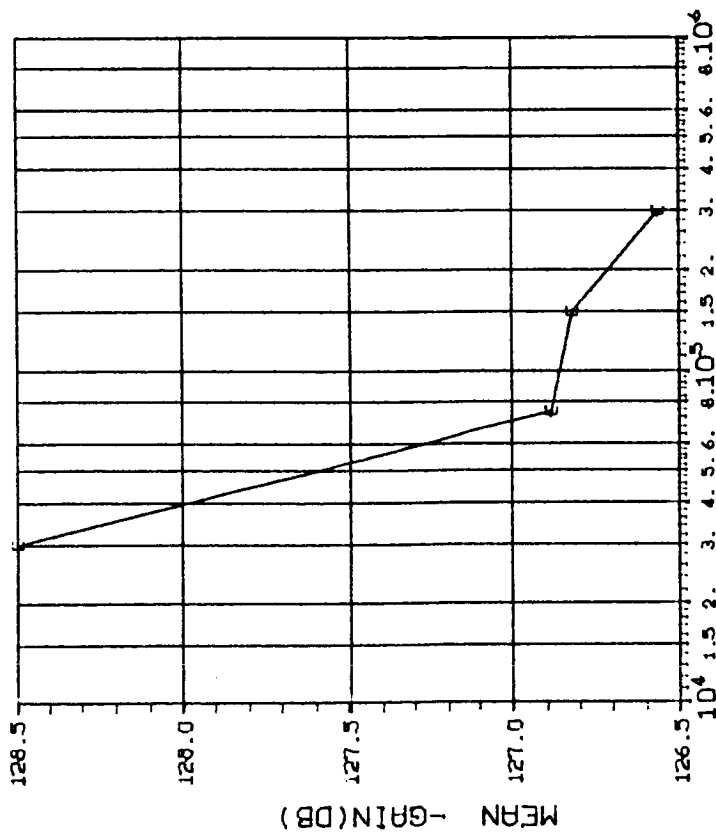
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
D	***	6.0E3 1.0E6 2.0E6

INITIAL MEAN VALUE +GAIN(DB) = 1.31X10¹²

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 11-13-85

REF: JPL LOG 1146-3 DATE CODE 8350



DOSE, rads(Sj) Co⁶⁰ Gammas

(5)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

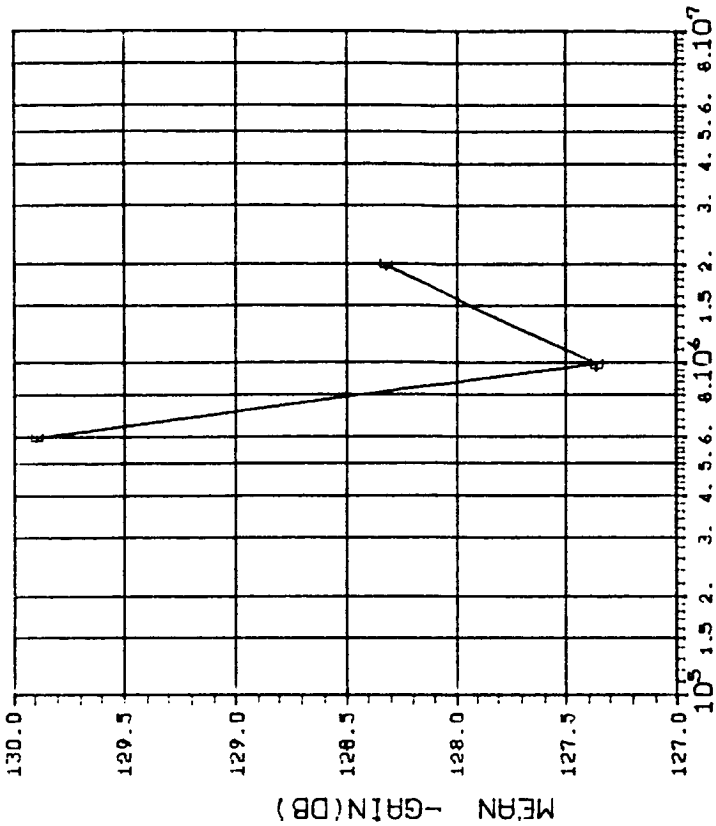
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Sj)
E	***	3.0E4 7.5E4 1.5E5 3.0E5
		3.769 4.879 6.909 9.108

INITIAL MEAN VALUE -GAIN(DB) = 1.32X10¹²

DEVICE TYPE: OP-27 OP AMP

MFG: MPS 4 DEVICES TEST DATE 11-13-85

REF: JPL LOG 1146-2 DATE CODE 8350



DOSE, rads(Sj) Co⁶⁰ Gammas

(5)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Sj)
E	***	6.0E3 1.0E6 2.0E6
		7.386 8.483 7.782

INITIAL MEAN VALUE -GAIN(DB) = 1.32X10¹²

DEVICE TYPE: OP-27 OP AMP

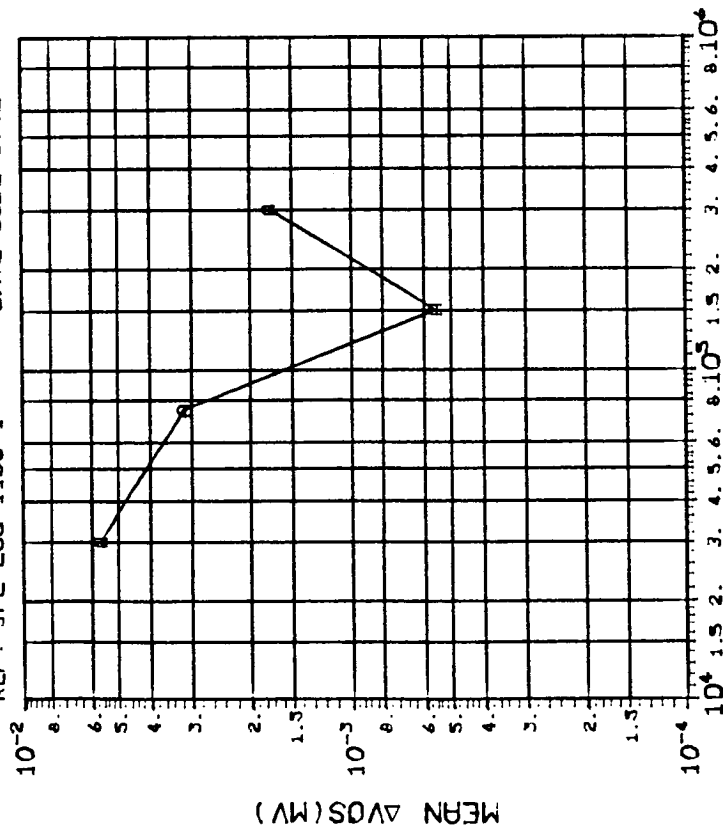
MFG: PMI

5 DEVICES

TEST DATE 09-05-85

REF: JPL LOG 1130-1

DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 7.5E4 1.5E5 3.0E5
	.0467 .0463 .0482 .0497

INITIAL MEAN VALUE VOS(MV) = 9.06X10⁻³

DEVICE TYPE: OP-27 OP AMP

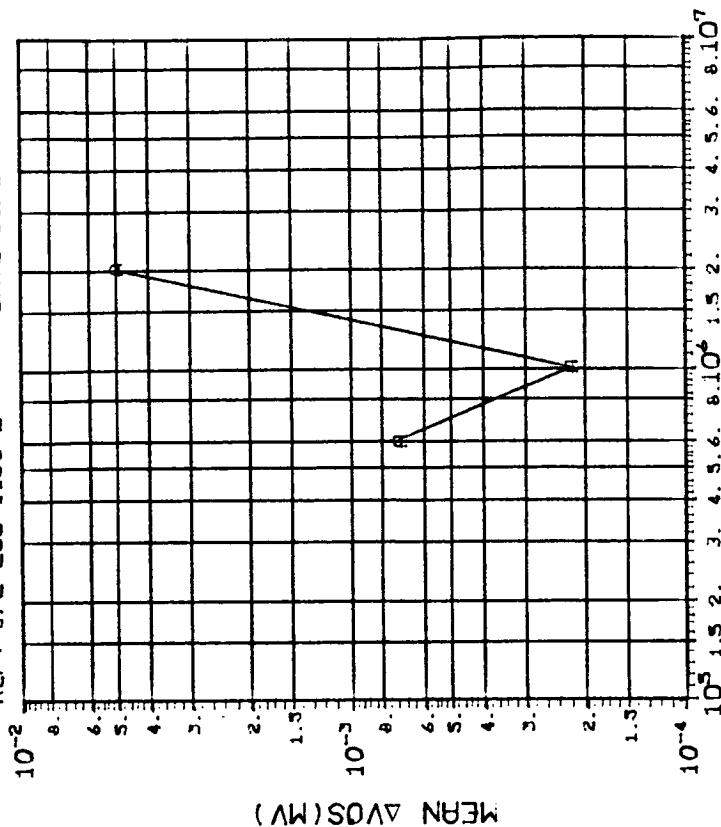
MFG: PMI

5 DEVICES

TEST DATE 09-05-85

REF: JPL LOG 1130-2

DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VS DOSE

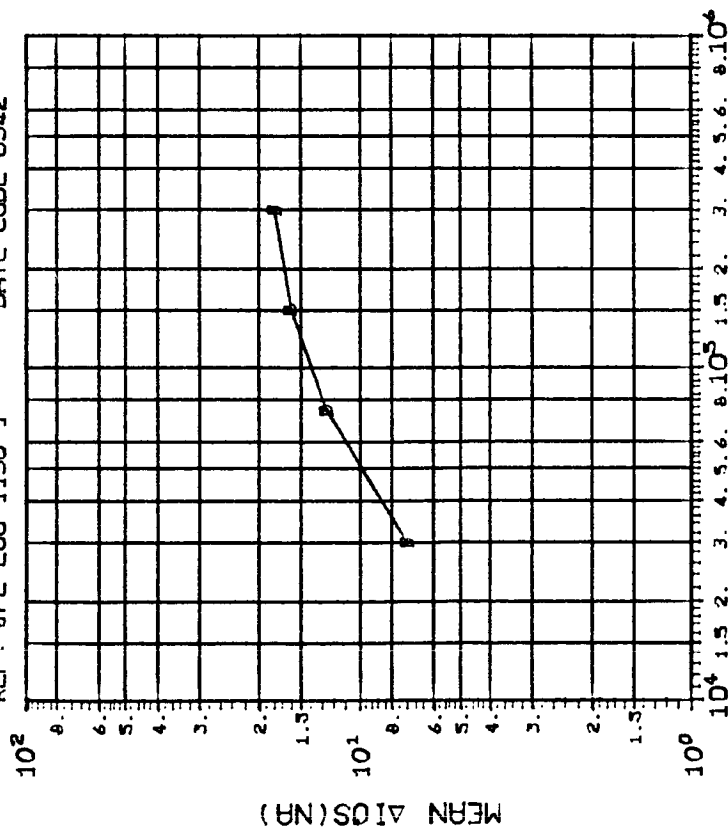
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	6.0E3 1.0E6 2.0E6
	.0488 .0470 .0475

INITIAL MEAN VALUE VOS(MV) = 9.06X10⁻³

DEVICE TYPE: OP-27 OP AMP

MFG: PM1 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1130-1 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gamma

(2)ΔIOS(NA): VS DOSE

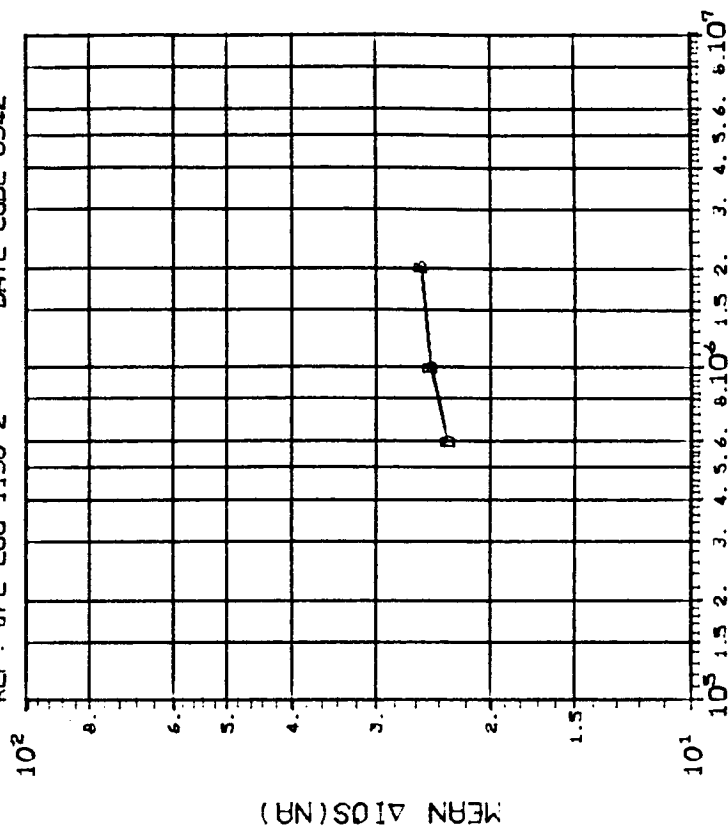
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 7.5E4 1.5E5 3.0E5
	1.724 7.997 11.60 16.01

INITIAL MEAN VALUE IOS(NA) = 4.07X10⁻⁹

DEVICE TYPE: OP-27 OP AMP

MFG: PM1 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1130-2 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gamma

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	6.0E5 1.0E6 2.0E6
	18.29 20.17 20.00

INITIAL MEAN VALUE IOS(NA) = 4.07X10⁻⁹

DEVICE TYPE: OP-27 OP AMP

MFG: PM1 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1130-1 DATE CODE 8342

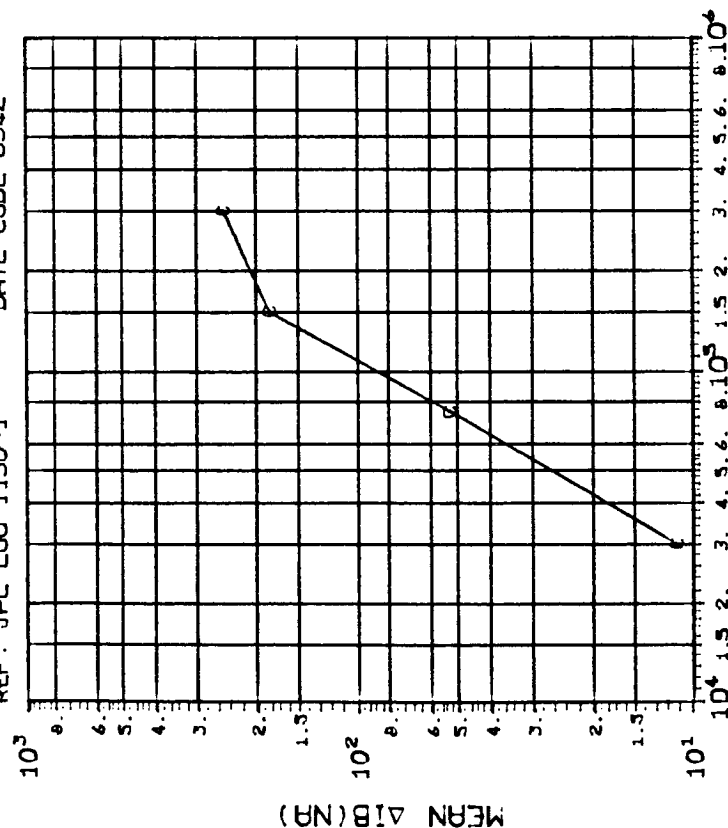


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
	7.003 38.34 136.2 200.9

INITIAL MEAN VALUE $IB(NA)$ = 3.26×10^{-9}

DEVICE TYPE: OP-27 OP AMP

MFG: PM1 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1130-2 DATE CODE 8342

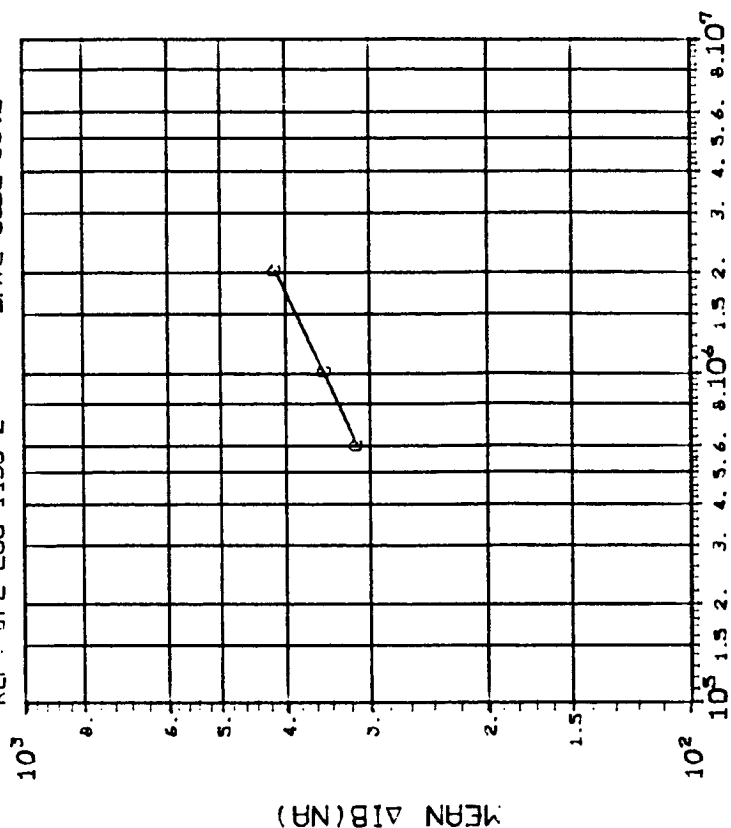


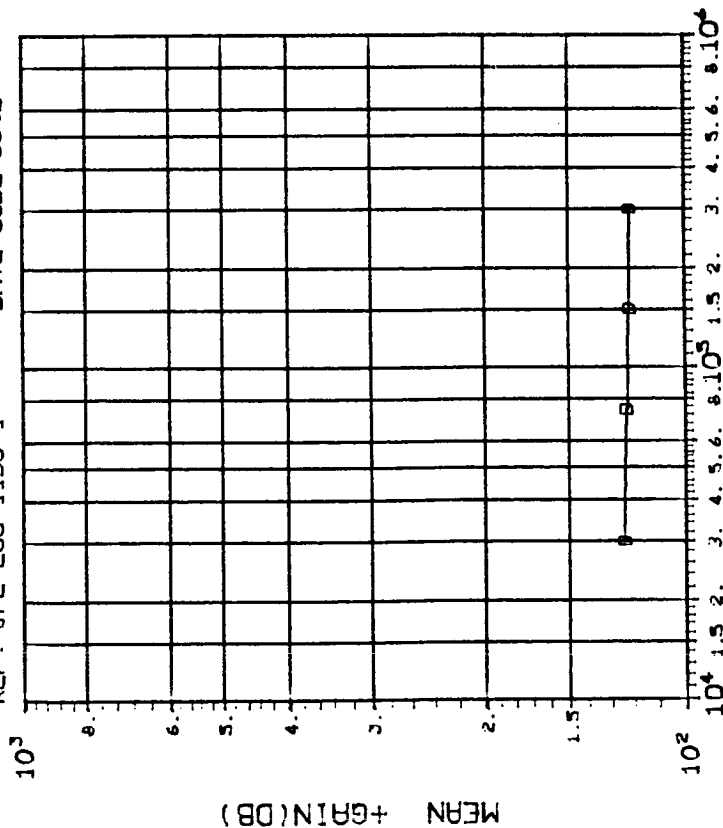
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	6.0E3 1.0E6 2.0E6
	183.6 168.5 151.4

INITIAL MEAN VALUE $IB(NA)$ = 3.26×10^{-9}

DEVICE TYPE: OP-27 OP AMP

MFG: PM1 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1130-1 DATE CODE 8342



MEAN + GAIN (DB)

DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB (10MA LOAD, +10V): VS DOSE

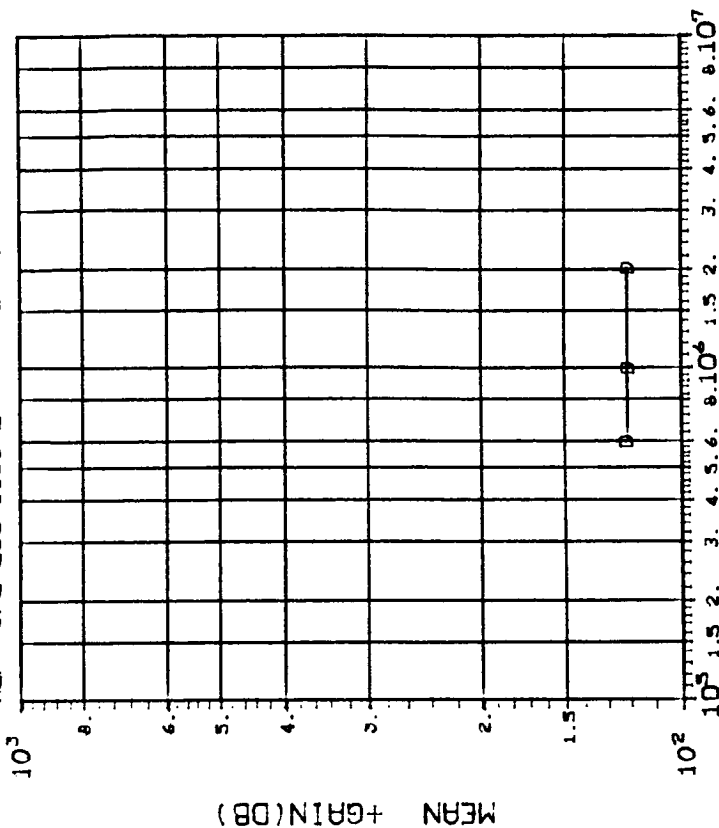
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	3.0E3 7.5E4 1.3E3 3.0E3
	.6228 .2966 .8977 1.234

INITIAL MEAN VALUE +GAIN(DB) = 1.25X10²

DEVICE TYPE: OP-27 OP AMP

MFG: PM1 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1130-2 DATE CODE 8342



MEAN + GAIN (DB)

DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB (10MA LOAD, +10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
D	6.0E3 1.0E6 2.0E6
	1.011 .7213 .5396

INITIAL MEAN VALUE +GAIN(DB) = 1.25X10²

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85
REF: JPL LOG 1130-1 DATE CODE 8342

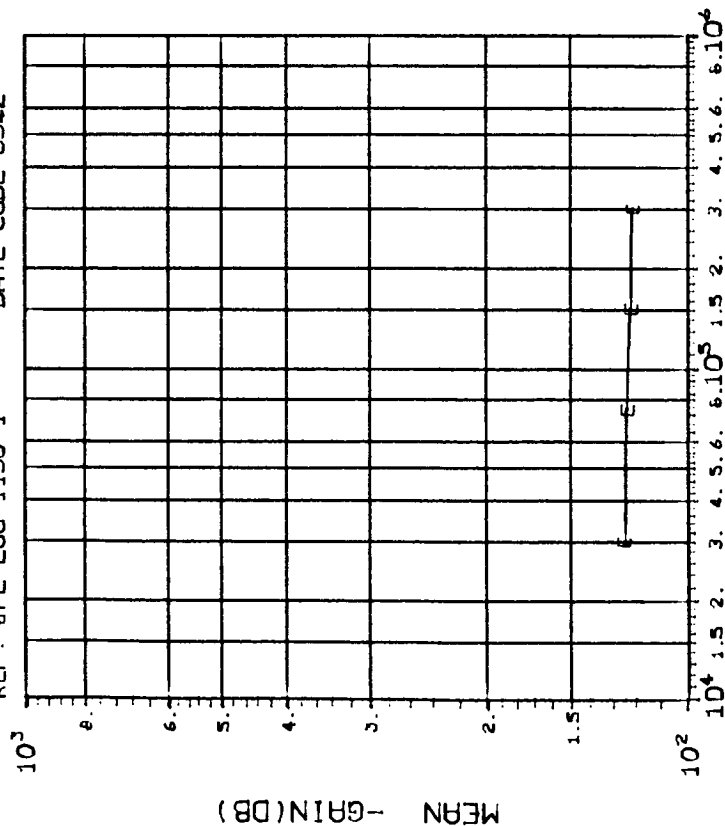


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	3.0E4 7.5E4 1.5E5 3.0E5
E	.8353 .6718 .9452 1.217

INITIAL MEAN VALUE -GAIN(DB) = 1.26X10⁺²

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85
REF: JPL LOG 1130-2 DATE CODE 8342

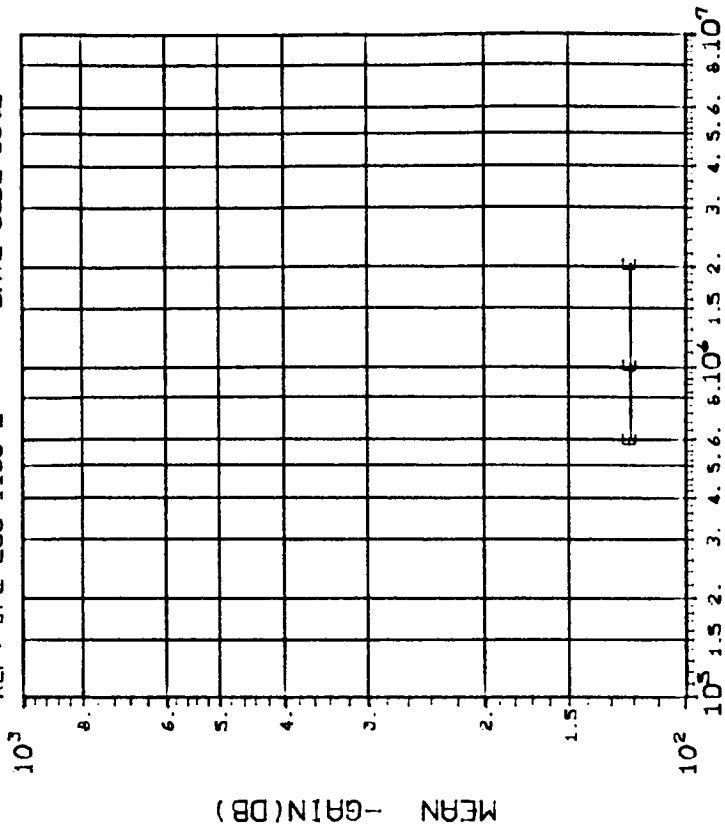


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	6.0E5 1.0E6 2.0E6
E	1.150 1.036 .5787

INITIAL MEAN VALUE -GAIN(DB) = 1.26X10⁺²

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1131 DATE CODE 8342

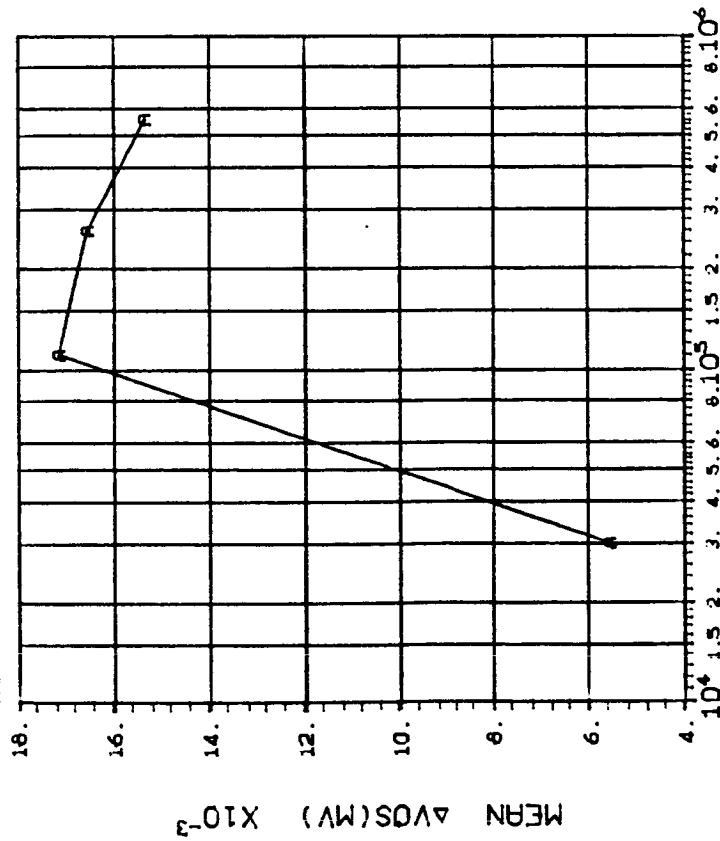


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, rads(Si)	
A	3.0E4 1.1E5 2.6E5 5.6E5	.0018 .0059 .0058 .0057

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1131 DATE CODE 8342

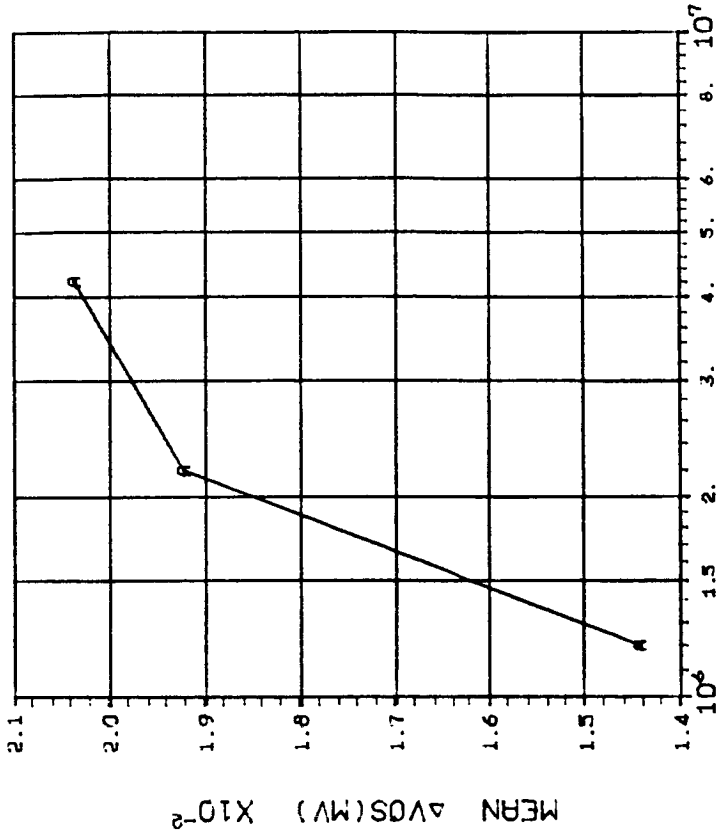


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, rads(Si)	
A	1.2E6 2.2E6 4.2E6	.0079 .0046 .0086

DEVICE TYPE: OP-27 OP AMP

MFG: PM1 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1131 DATE CODE 8342

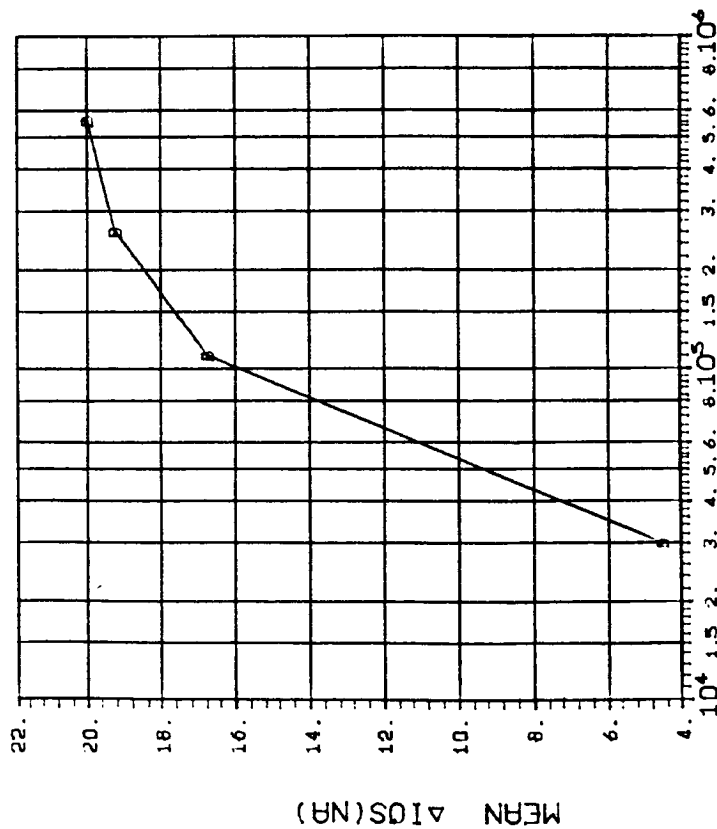


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 1.1E5 2.6E5 5.6E5
B	2.302 14.97 17.79 17.62

DEVICE TYPE: OP-27 OP AMP

MFG: PM1 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1131 DATE CODE 8342

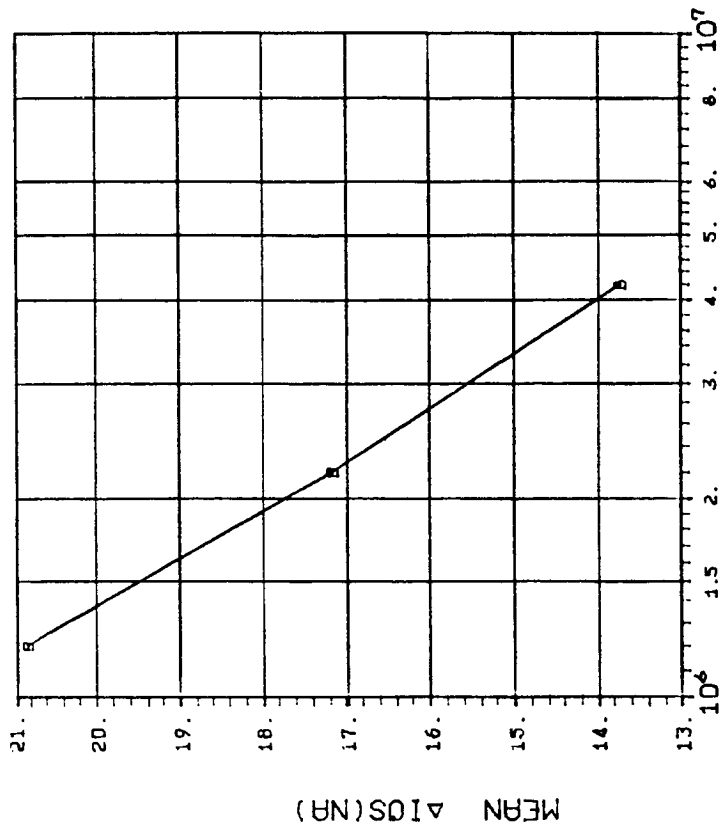
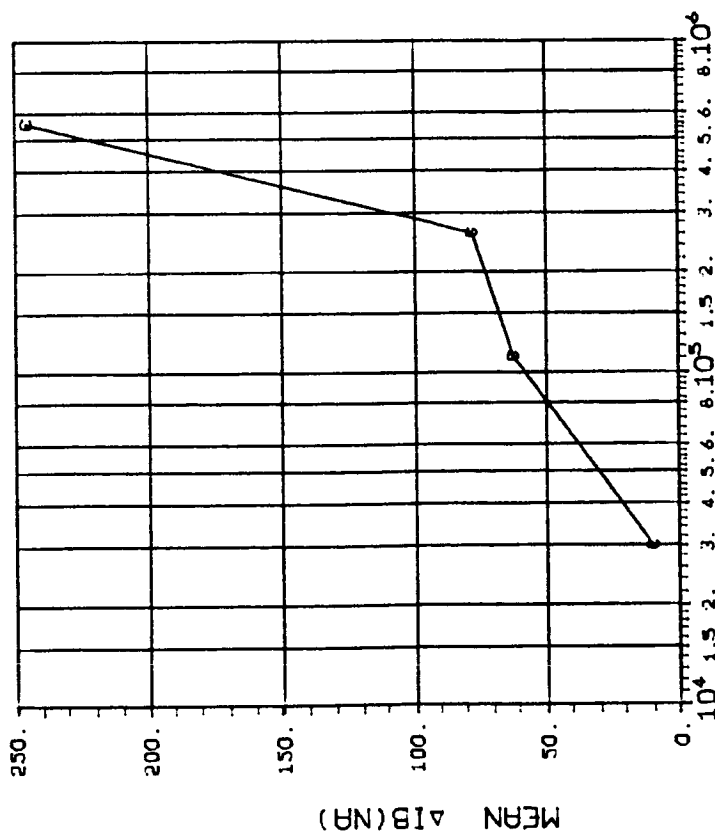


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	1.2E6 2.2E6 4.2E6
B	18.71 15.61 12.03

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

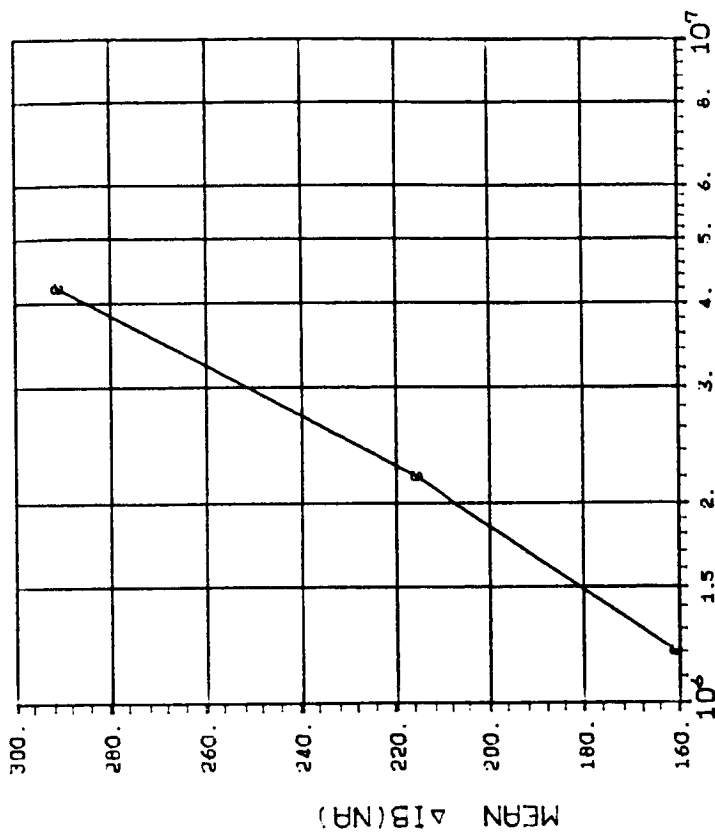
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, rads(Si)
C	3.0E4 1.1E5 2.6E5 3.6E5
C	11.15 90.79 87.73 304.4

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

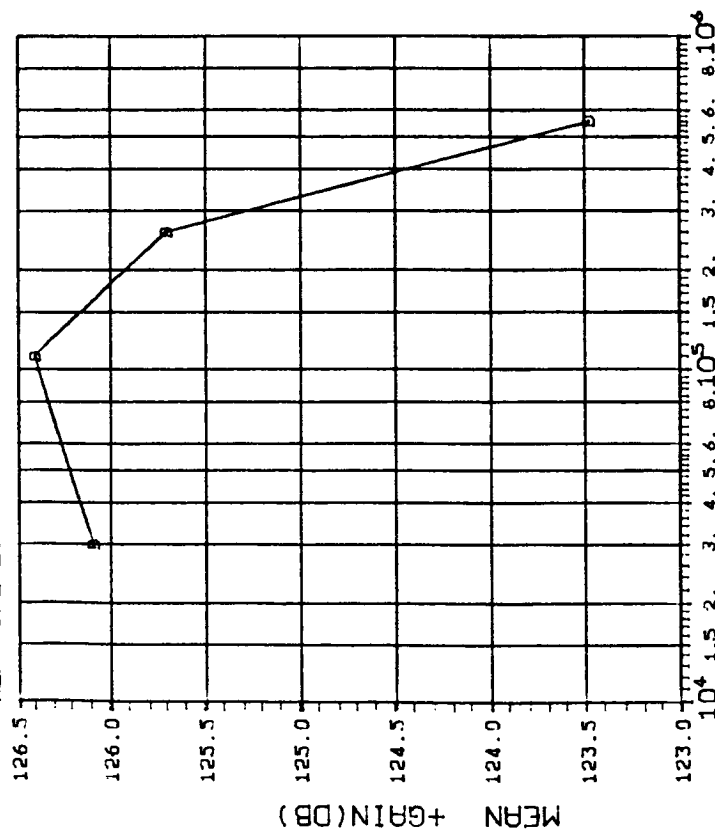
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, rads(Si)
C	1.2E6 2.2E6 4.2E6
C	89.86 90.76 89.64

DEVICE TYPE: OP-27 OP AMP

MFG: PM1 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

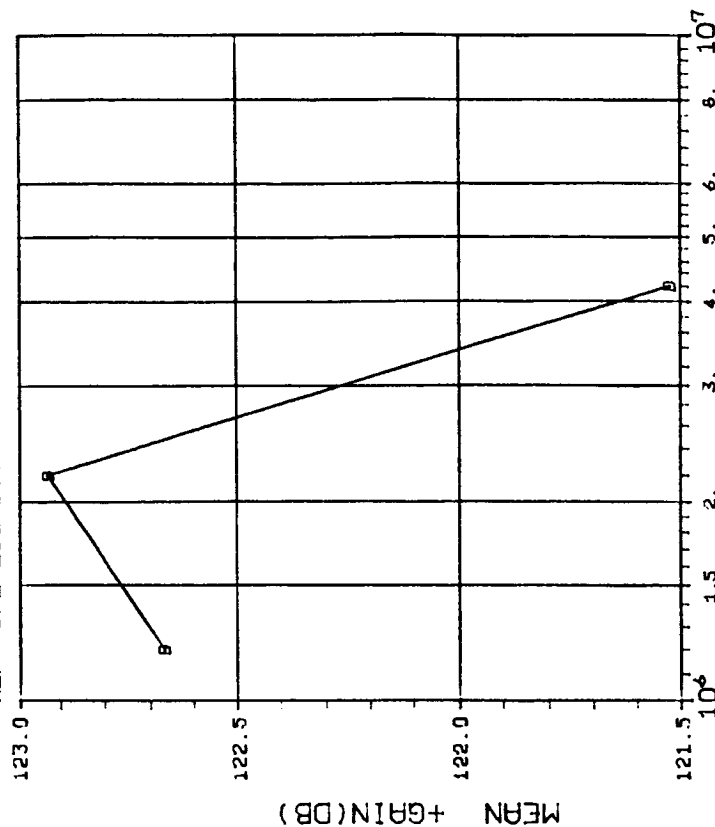
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
D	10.0	3.0E4 1.1E5 2.6E5 5.6E5
		1.249 .8668 .7082 1.751

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10⁺²

DEVICE TYPE: OP-27 OP AMP

MFG: PM1 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD,+10V): VS DOSE

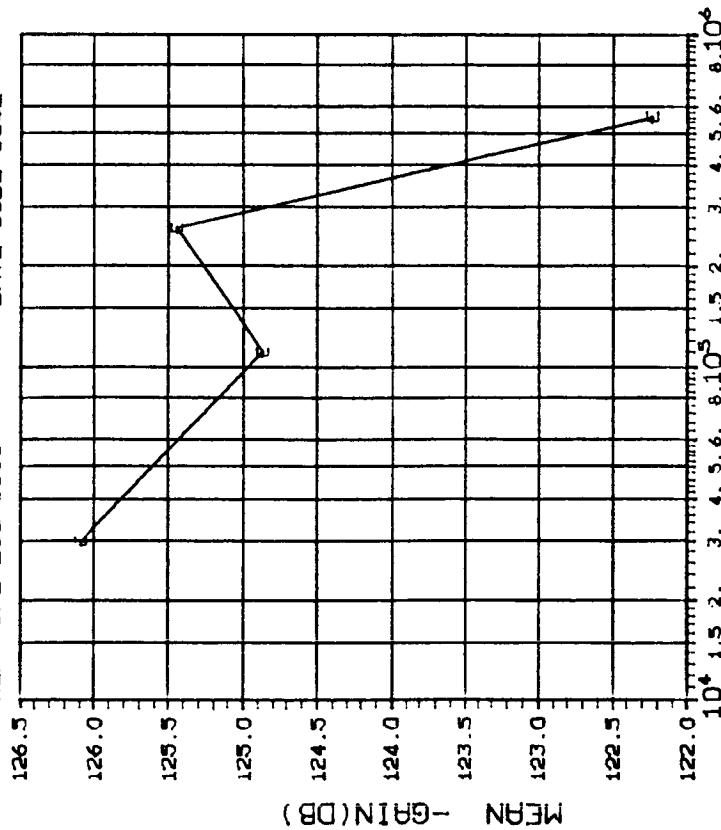
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
D	10.0	1.2E6 2.2E6 4.2E6
		1.108 1.266 .5603

INITIAL MEAN VALUE +GAIN(DB) = 1.27X10⁺²

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gamma

(5)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

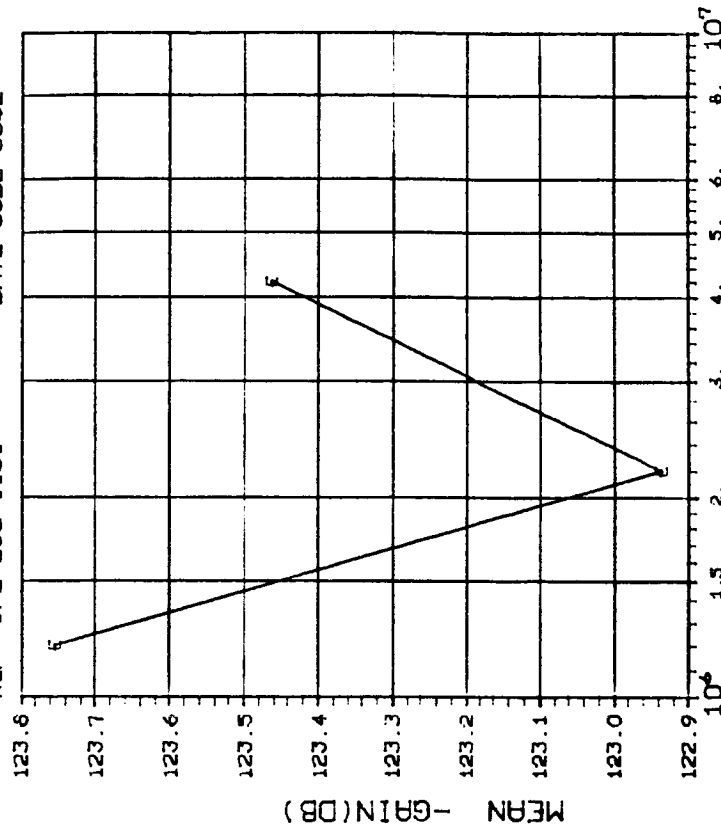
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I_L (mA)	DOSE, rads(Si)
E	10.0	3.0E4 1.1E5 2.6E5 5.6E5
E	10.0	1.249 1.620 1.557 1.309

INITIAL MEAN VALUE -GAIN(DB) = $1.25 \times 10^{+2}$

DEVICE TYPE: OP-27 OP AMP

MFG: PMI 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1131 DATE CODE 8342



DOSE, rads(Si) Co⁶⁰ Gamma

(5)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

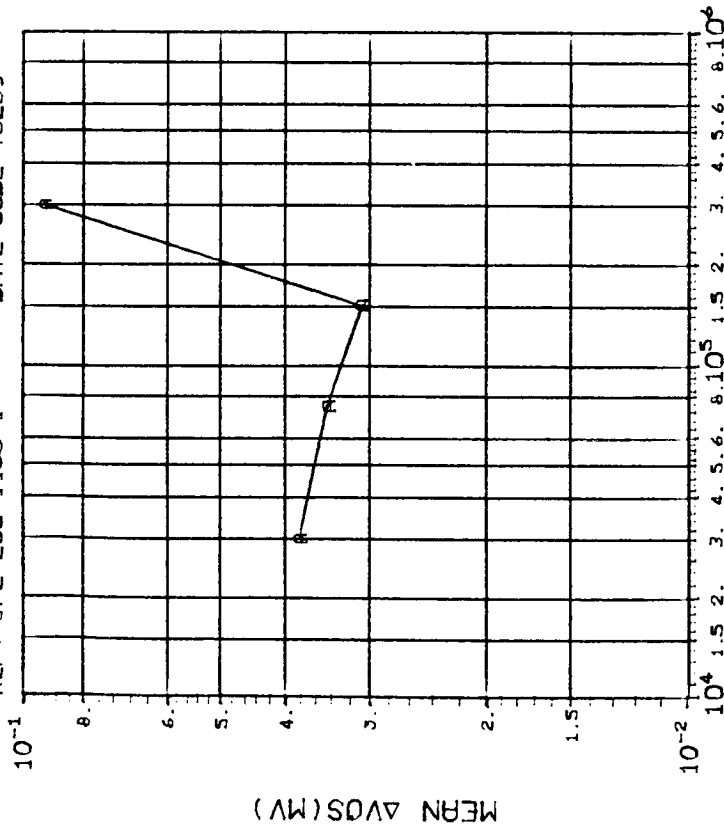
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I_L (mA)	DOSE, rads(Si)
E	10.0	1.2E6 2.2E6 4.2E6
E	10.0	1.779 1.369 1.539

INITIAL MEAN VALUE -GAIN(DB) = $1.25 \times 10^{+2}$

DEVICE TYPE: QP-27 QP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-1 DATE CODE T8230



DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VSDOSE

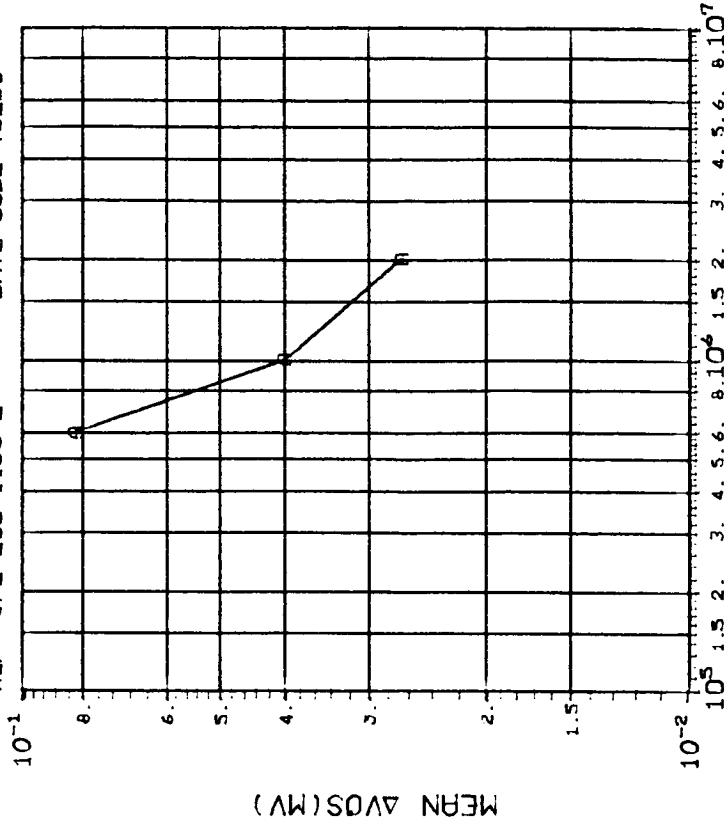
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	3.0E4 7.5E4 1.5E5 3.0E5
	.0159 .0164 .0667 .0595

INITIAL MEAN VALUE VOS(MV) = 3.33X10⁻²

DEVICE TYPE: QP-27 QP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-2 DATE CODE T8230



DOSE, rads(Si) Co⁶⁰ Gammas

(1)ΔVOS(MV): VSDOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
A	6.0E5 1.0E6 2.0E6
	.0520 .0601 .0577

INITIAL MEAN VALUE VOS(MV) = 3.33X10⁻²

DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-1 DATE CODE T8230

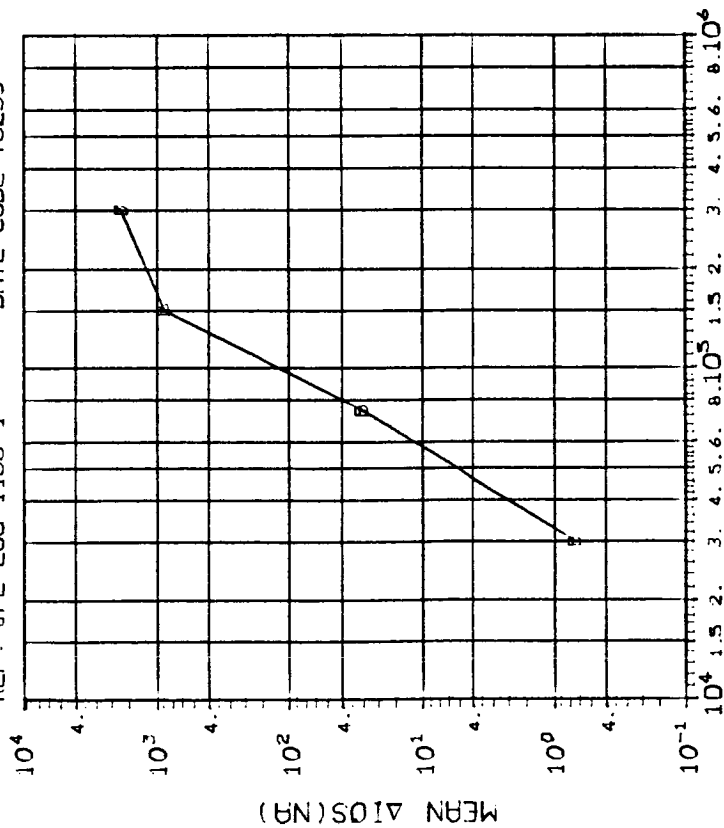


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	3.0E4 7.5E4 1.5E5 3.0E5
	6.301 38.09 1046. 2092.

INITIAL MEAN VALUE IOS(NA) = 3.92×10^{-3}

DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-2 DATE CODE T8230

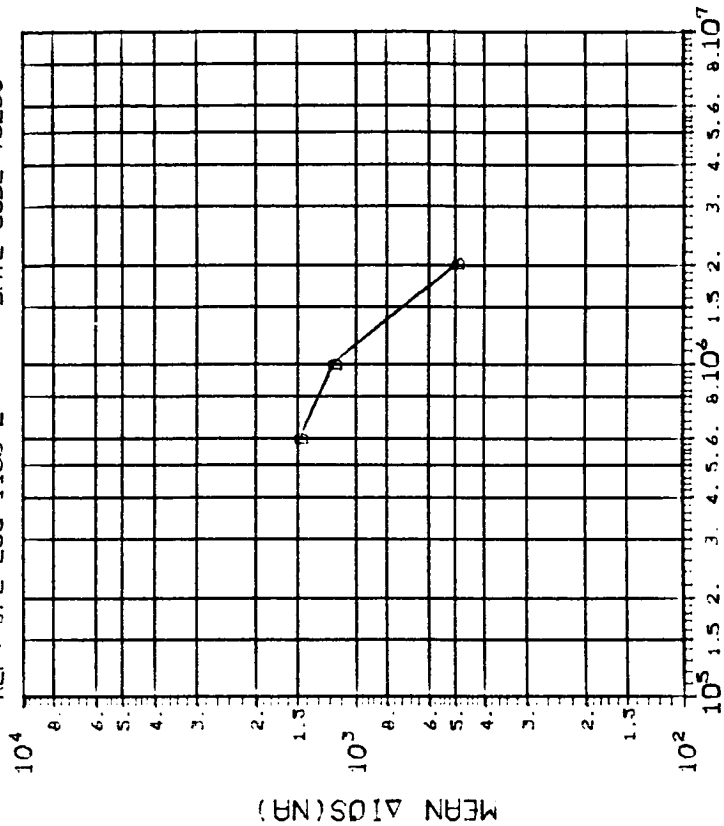


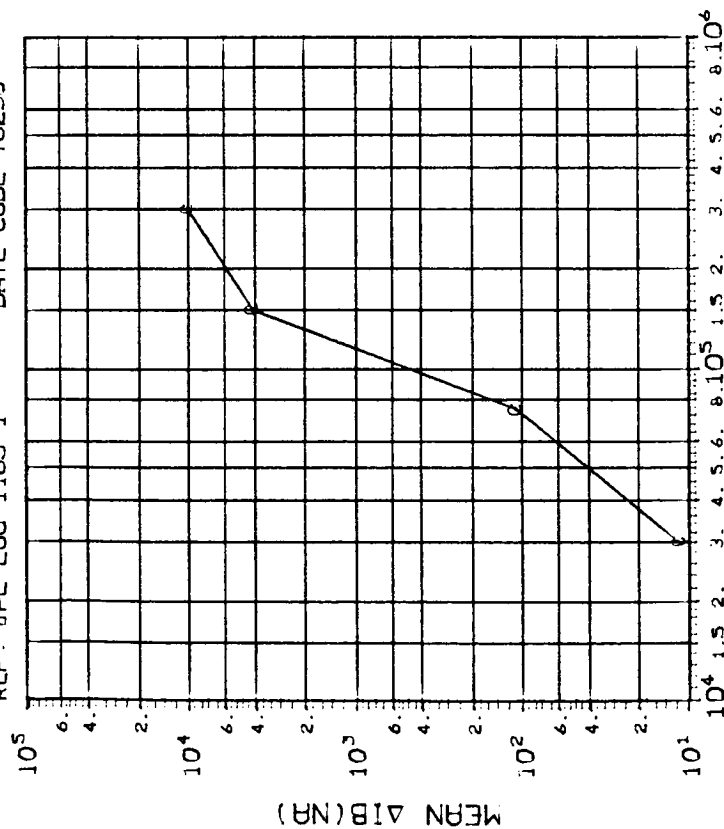
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
B	6.0E3 1.0E6 2.0E6
	1486. 1109. 418.4

INITIAL MEAN VALUE IOS(NA) = 3.92×10^{-3}

DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-1 DATE CODE T8230



DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

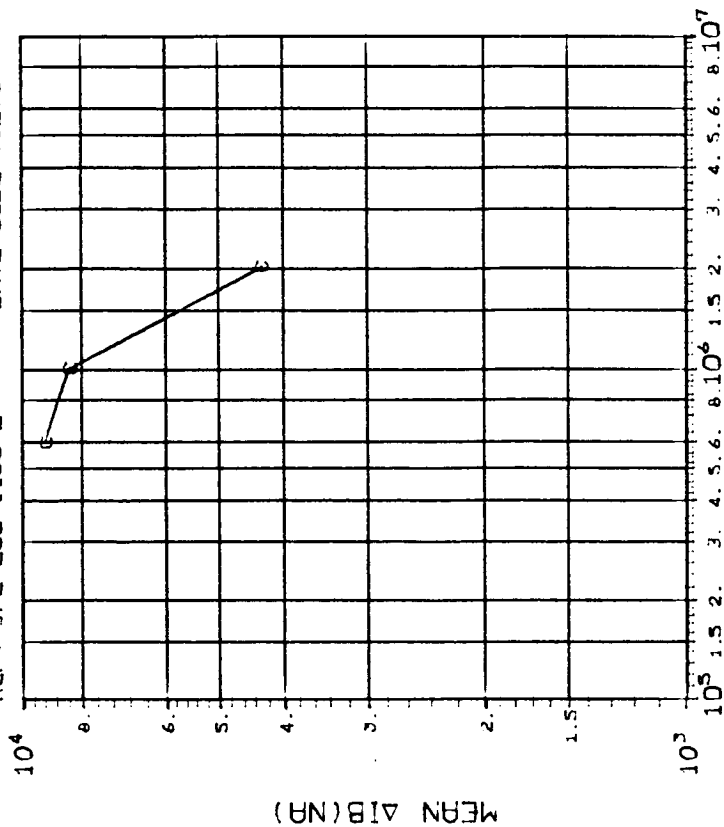
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 7.5E4 1.5E5 3.0E5
C	4.917 190.3 6246. *****

INITIAL MEAN VALUE IB(NA) = 1.34X10⁴

DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-2 DATE CODE T8230



DOSE, rads(Si) Co⁶⁰ Gammas

(3)ΔIB(NA): VS DOSE

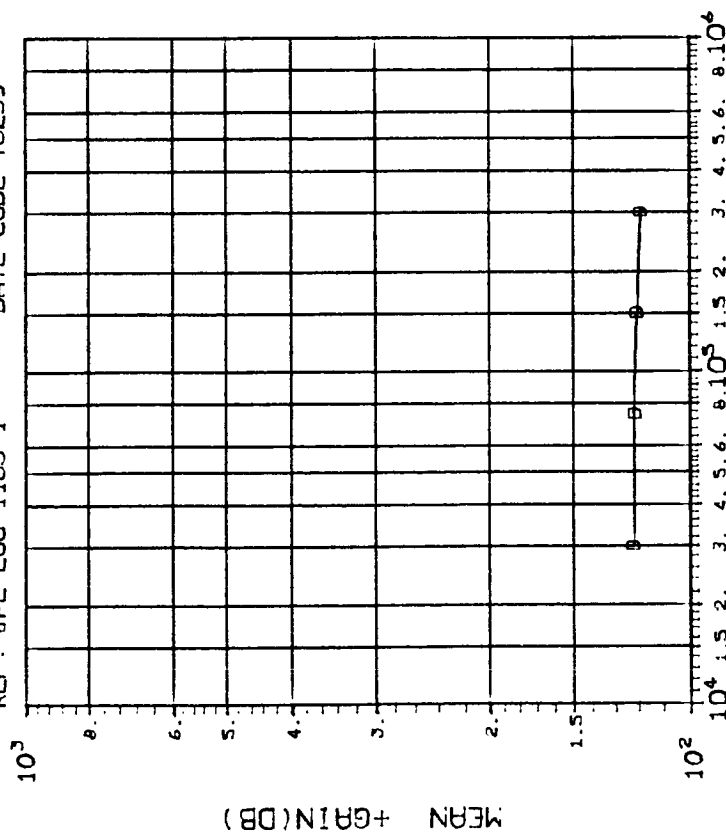
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	6.0E5 1.0E6 2.0E6
C	***** 8571. 3734.

INITIAL MEAN VALUE IB(NA) = 1.34X10⁴

DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

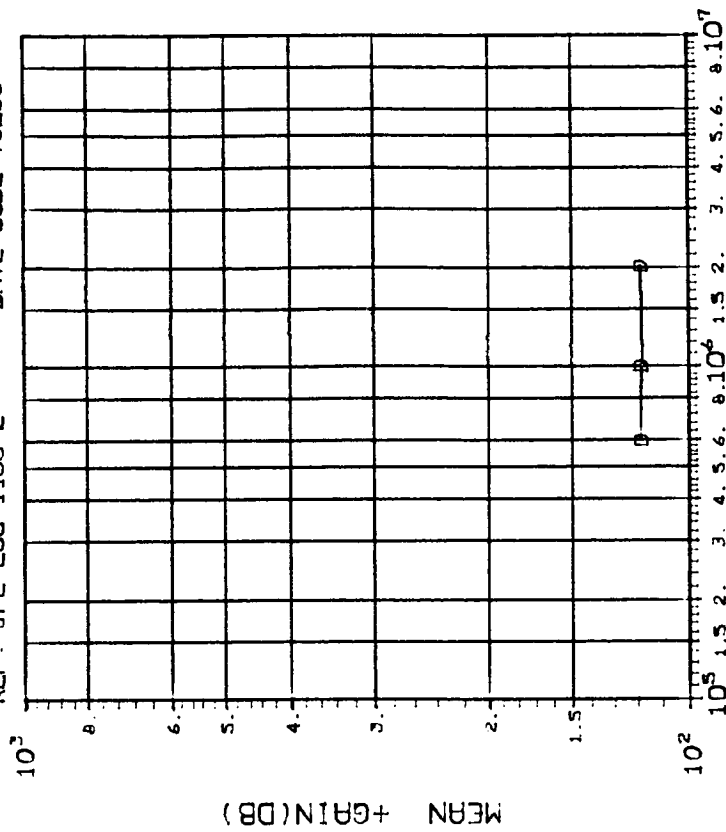
REF: JPL LOG 1185-1 DATE CODE T8230



DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-2 DATE CODE T8230



DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-1 DATE CODE T8230

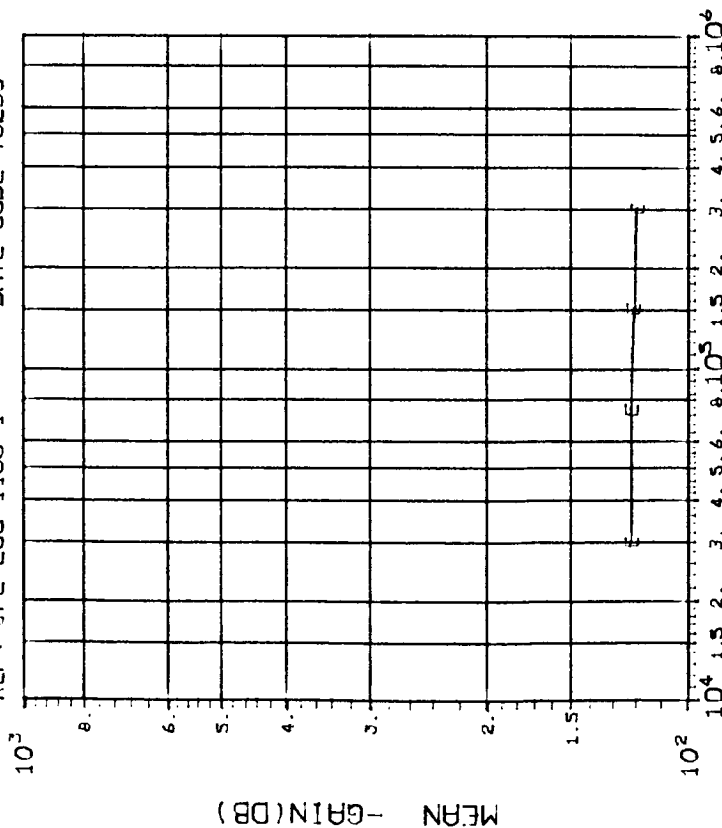


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	3.0E4 7.3E4 1.5E5 3.0E5
E	.5857 .7093 1.060 4.388

INITIAL MEAN VALUE -GAIN(DB) = $1.22 \times 10^{+2}$

DEVICE TYPE: OP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1185-2 DATE CODE T8230

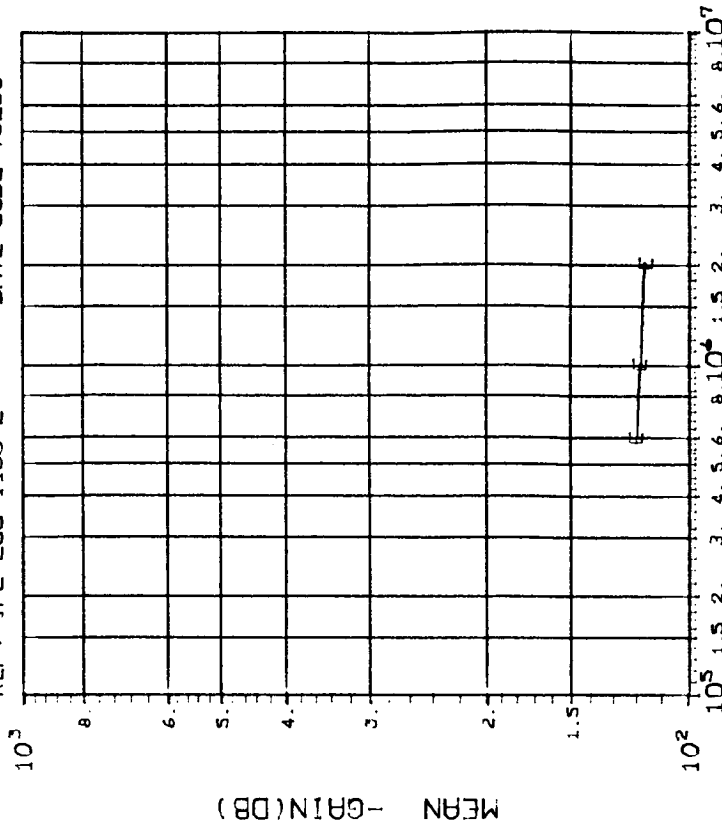


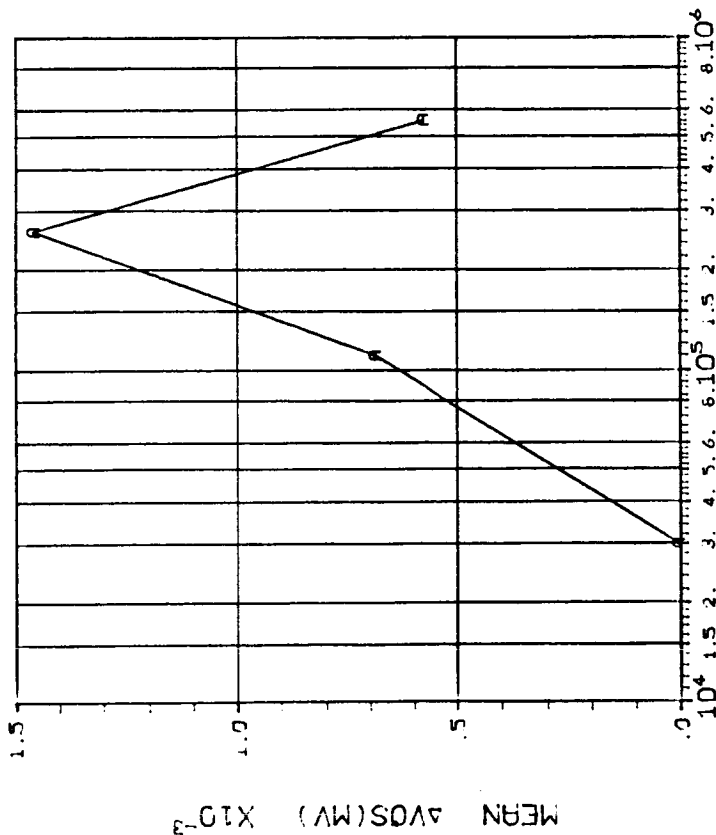
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
E	6.0E3 1.0E6 2.0E6
E	3.902 3.979 3.319

INITIAL MEAN VALUE -GAIN(DB) = $1.22 \times 10^{+2}$

DEVICE TYPE: UP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1186 DATE CODE T8230



(1) $\Delta VOS(MV)$: VS DOSE

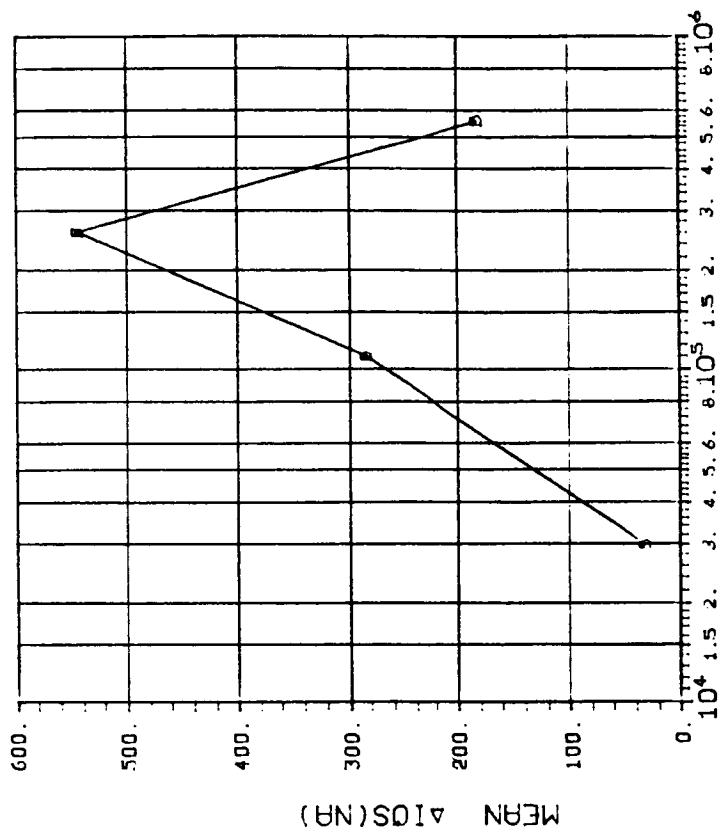
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, rads(Si)
A	3.0E4 1.1E5 2.6E5 5.6E5
	.0077 .4121 .8693 .2624

DEVICE TYPE: UP-27 OP AMP

MFG: RAY 5 DEVICES TEST DATE 09-05-85

REF: JPL LOG 1186 DATE CODE T8230

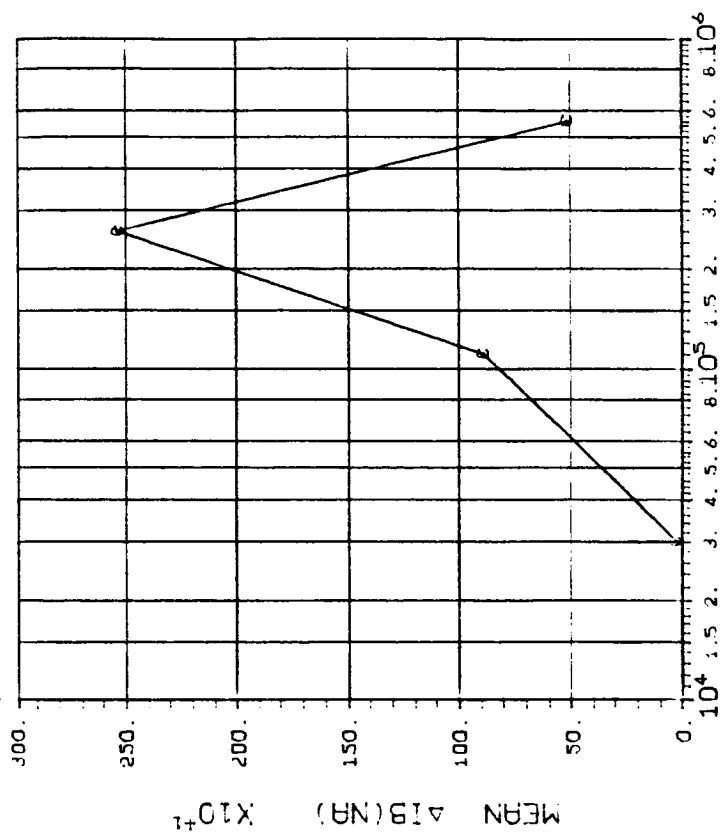


(2) $\Delta IOS(MA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, rads(Si)
B	3.0E4 1.1E5 2.6E5 5.6E5
	56.44 291.7 473.8 279.0

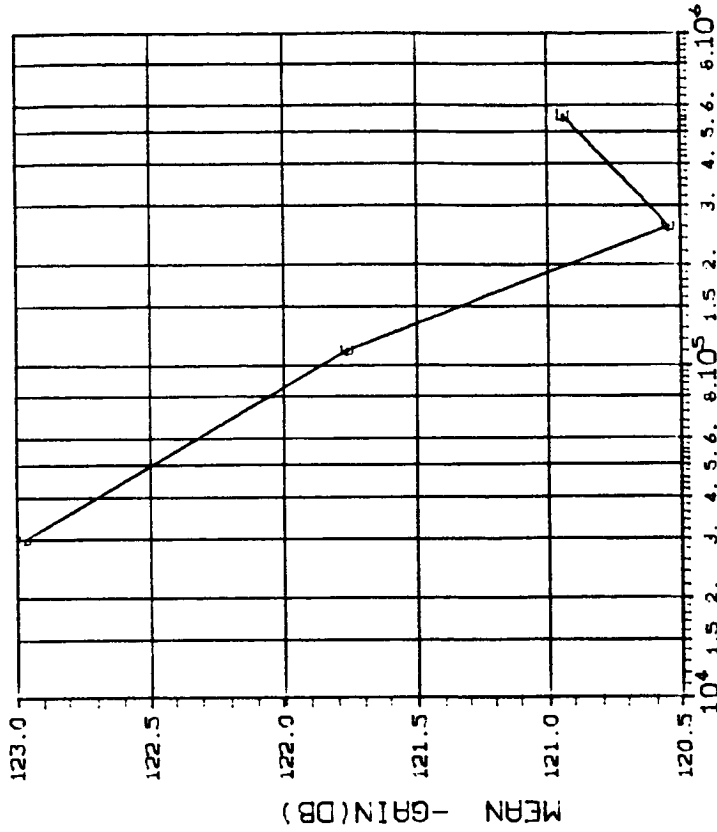
DEVICE TYPE: UP-27 OP AMP
 MFG: RAY 5 DEVICES TEST DATE 09-05-85
 REF: JPL LOG 1186 DATE CODE T8230



DOSE, rads(Si) Co ⁶⁰ Gammas
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, rads(Si)
C	3.0E4 1.1E5 2.0E5 5.0E5
	66.05 796.4 1989. 530.9

DEVICE TYPE: OP-27 OP AMP
MFG: RAY 5 DEVICES TEST DATE 09-05-85
REF: JPL LOG 1186 DATE CODE T8230



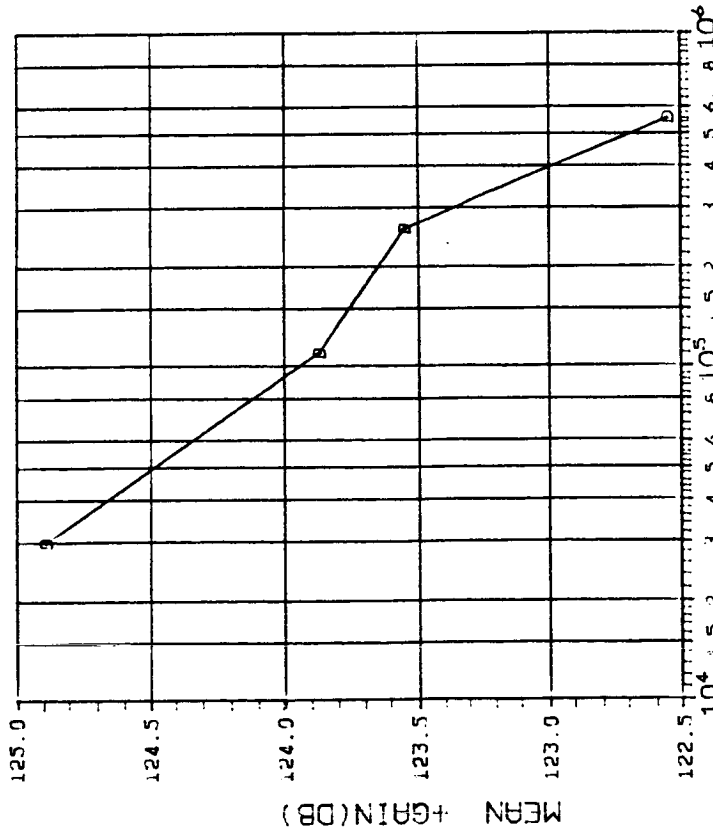
DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(10MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
D	10.0	3.0E4 1.1E5 2.6E5 5.6E5
E	10.0	1.550 .9057 .5012 .6859

INITIAL MEAN VALUE -GAIN(DB) = 1.23X10¹²

DEVICE TYPE: OP-27 OP AMP
MFG: RAY 5 DEVICES TEST DATE 09-05-85
REF: JPL LOG 1186 DATE CODE T8230



DOSE, rads(Si) Co⁶⁰ Gammas

(4)+GAIN IN DB(10MA LOAD, +10V): VS DOSE

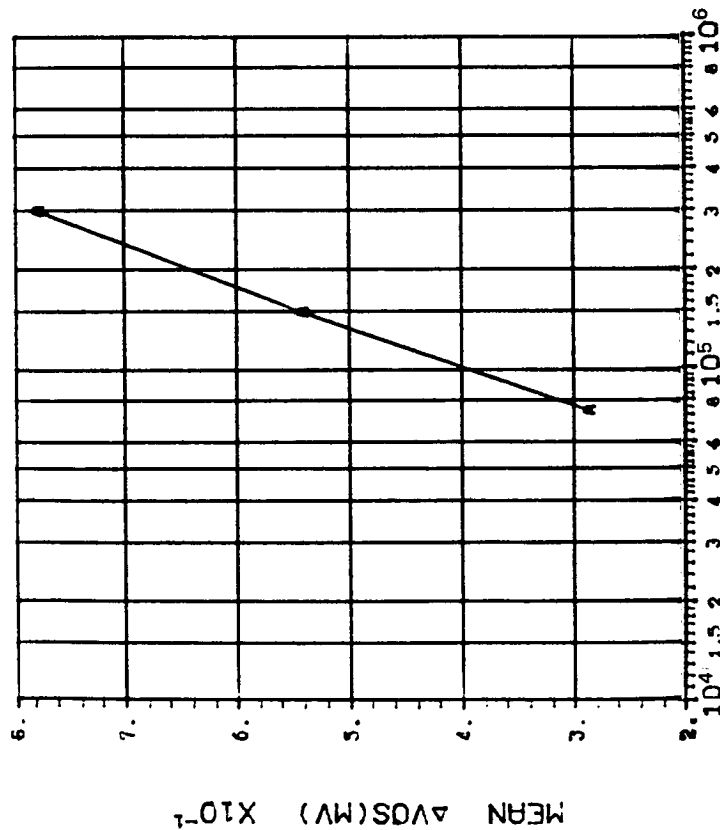
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, rads(Si)
D	10.0	1.786 2.347 3.184 3.130

INITIAL MEAN VALUE +GAIN(DB) = 1.23X10¹²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 0999-1 DATE CODE 118307



DOSE, rads(Si) 2.5 MeV electrons

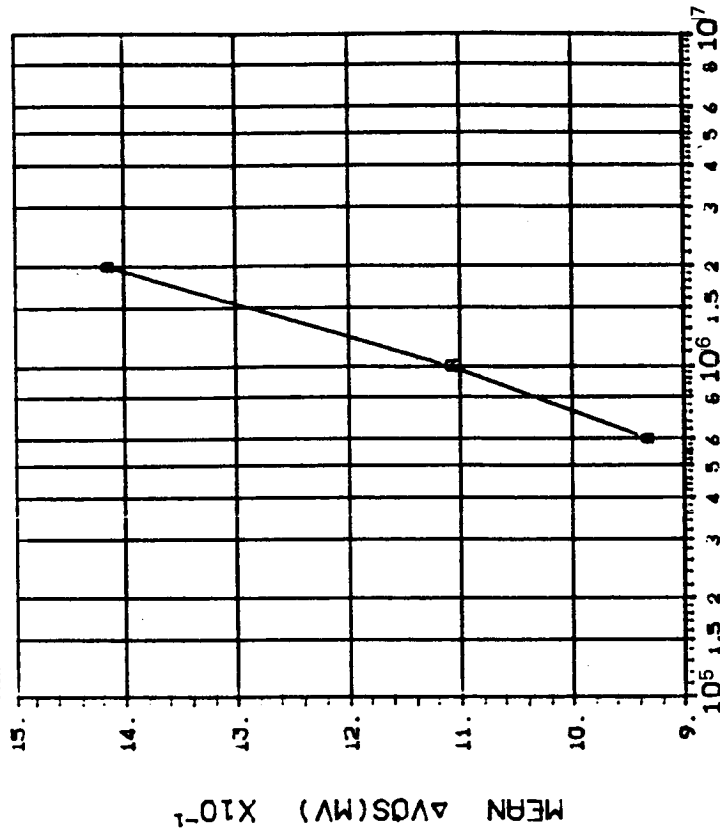
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	75 150 300
A	.2663 .4964 .7495

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 0999-2 DATE CODE 118307



DOSE, rads(Si) 2.5 MeV electrons

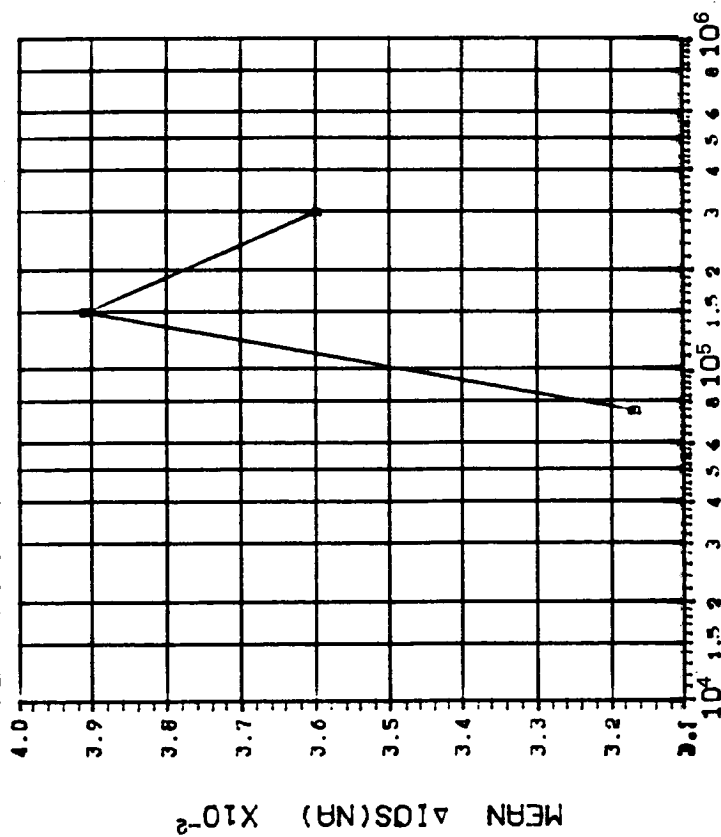
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	600 1000 2000
A	.9796 1.067 1.208

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 0999-1 DATE CODE 118307



DOSE, rads(Si) 2.5 MeV electrons

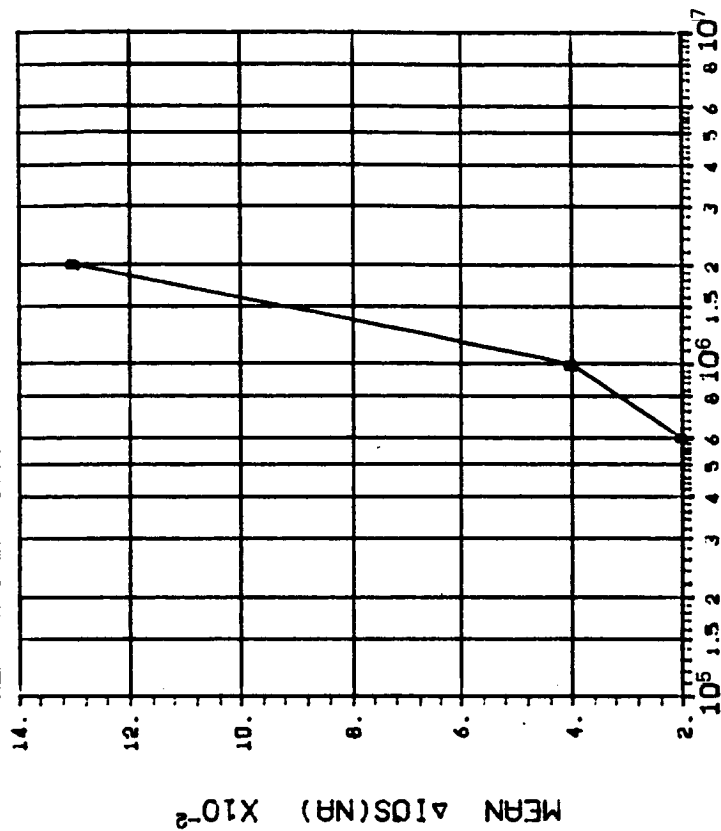
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.0421 .0672 .0596

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 0999-2 DATE CODE 118307



DOSE, rads(Si) 2.5 MeV electrons

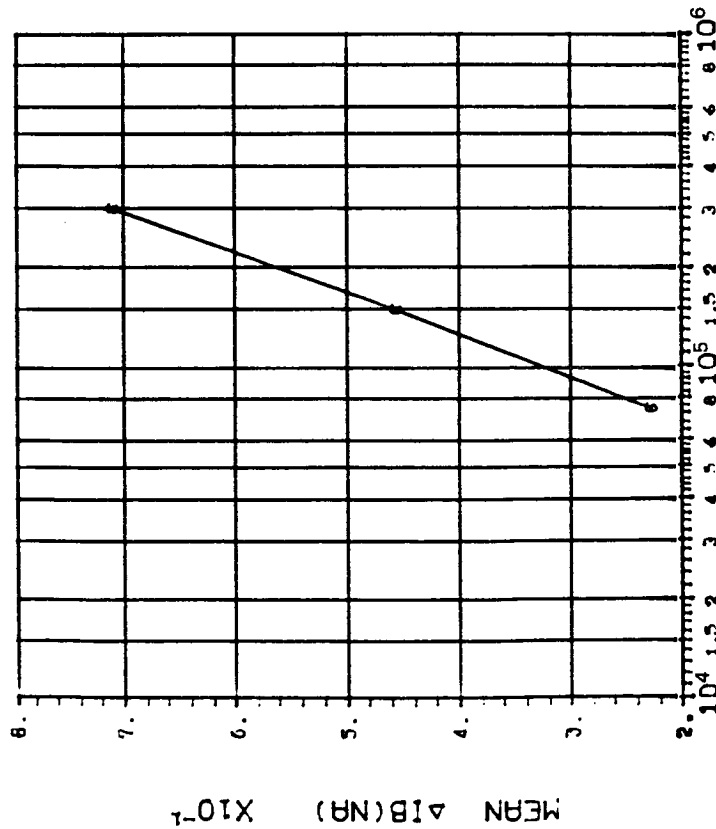
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.0139 .0493 .2236

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 0999-1 DATE CODE 118307



DOSE, rads(Si) 2.5 MeV electrons

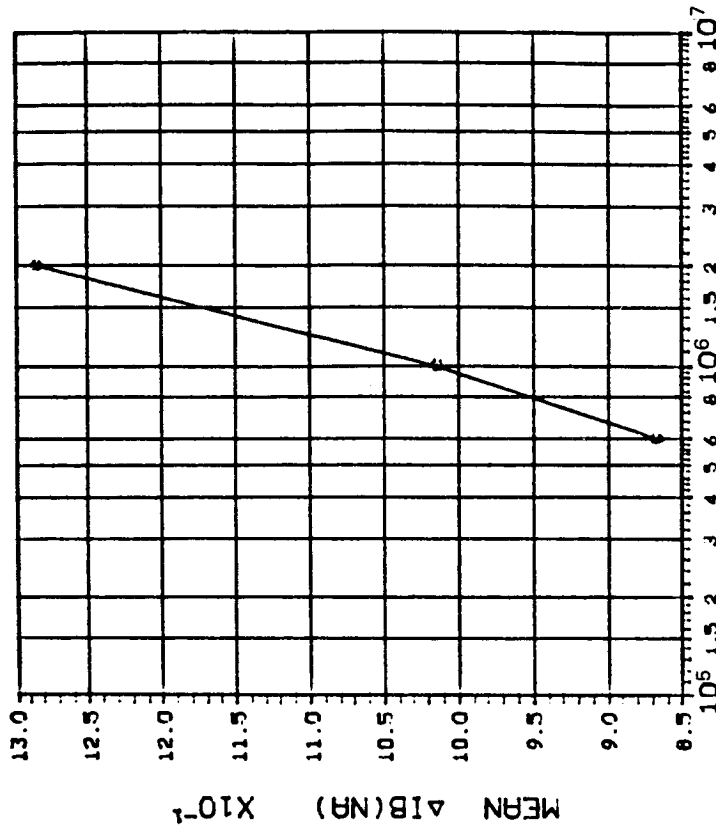
(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
.2569 .4343 .7461	

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 0999-2 DATE CODE 118307



DOSE, rads(Si) 2.5 MeV electrons

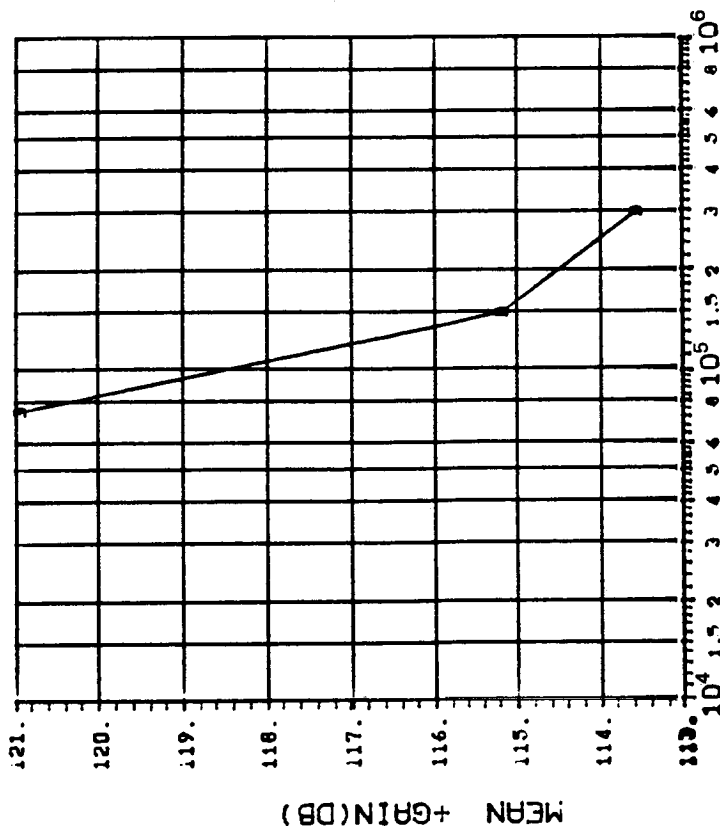
(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600
	1000
	2000
.9561 1.050 1.275	

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 0999-1 DATE CODE 118307



MEAN + GAIN(DB)

DOSE, rads(Si) 2.5 MeV electrons

(41)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

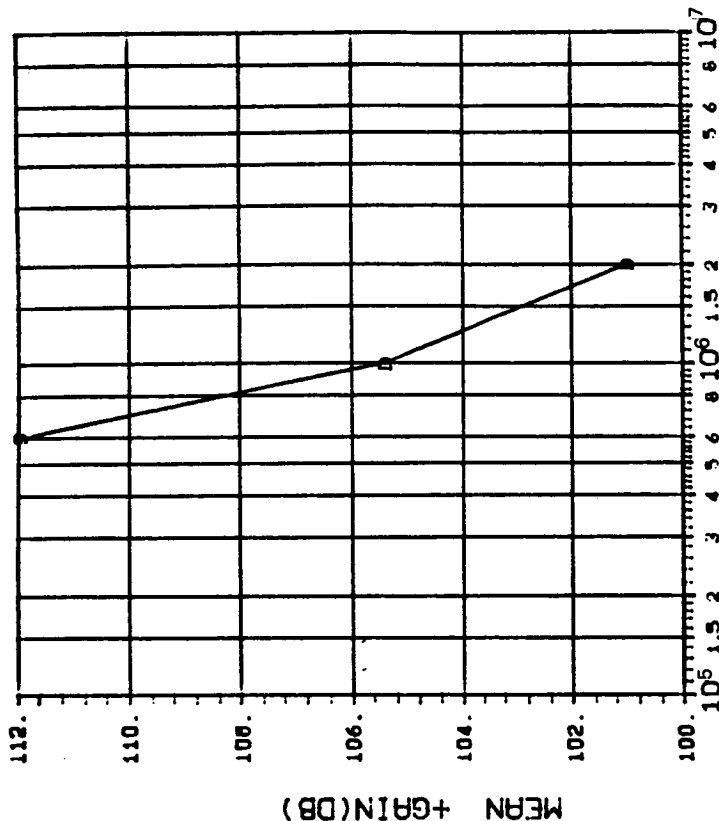
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	.6659 5.364 5.055

INITIAL MEAN VALUE +GAIN(DB) = 1.29X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 0999-2 DATE CODE 118307



MEAN + GAIN(DB)

DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

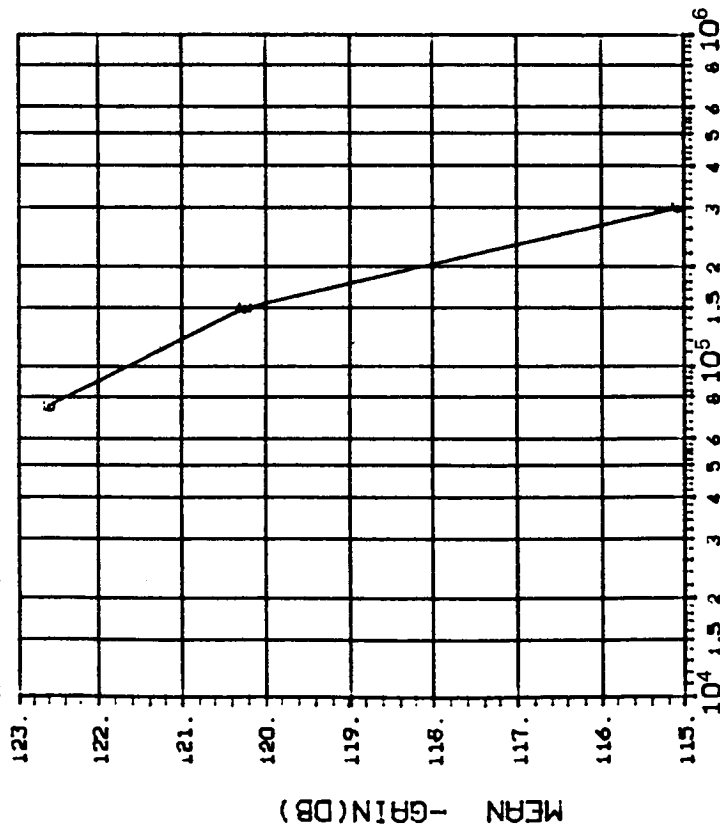
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	9.947 4.688 4.290

INITIAL MEAN VALUE +GAIN(DB) = 1.29X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 0999-1 DATE CODE 118307



DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(5.MA LOAD, -10V): VS DOSE

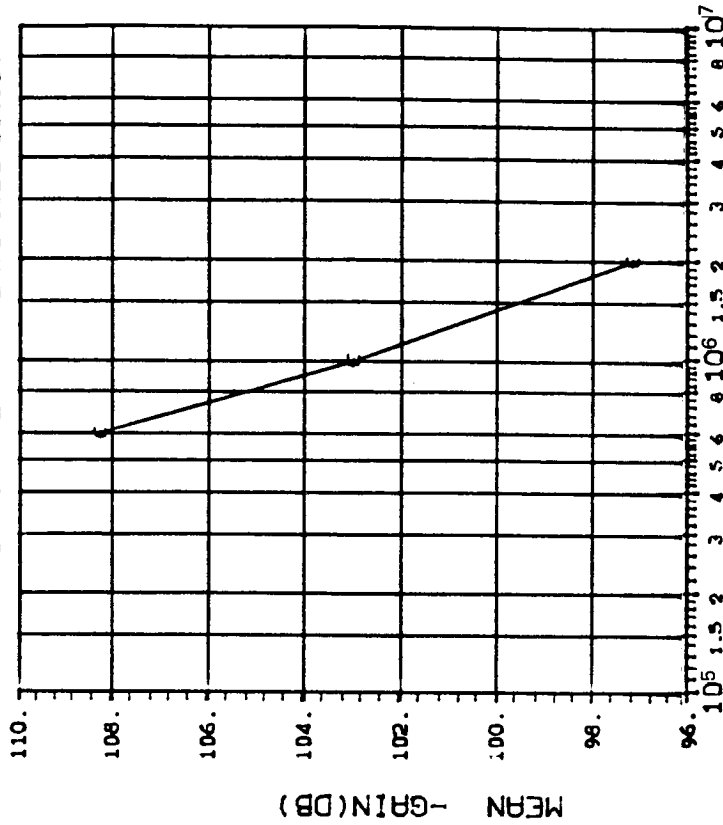
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300
		7.985 13.40 14.43

INITIAL MEAN VALUE -GAIN(DB) = 1.27X10¹²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 0999-2 DATE CODE 118307



DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(5.MA LOAD, -10V): VS DOSE

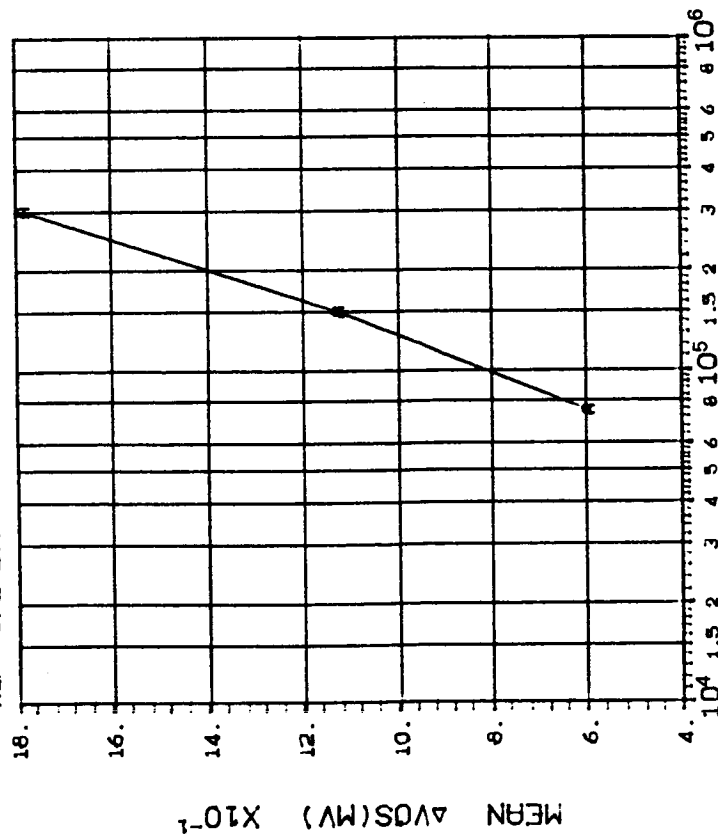
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	600 1000 2000
		7.342 5.190 4.128

INITIAL MEAN VALUE -GAIN(DB) = 1.27X10¹²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 1000-1 DATE CODE 118307



DOSE, rads(Si) 2.5 MeV electrons

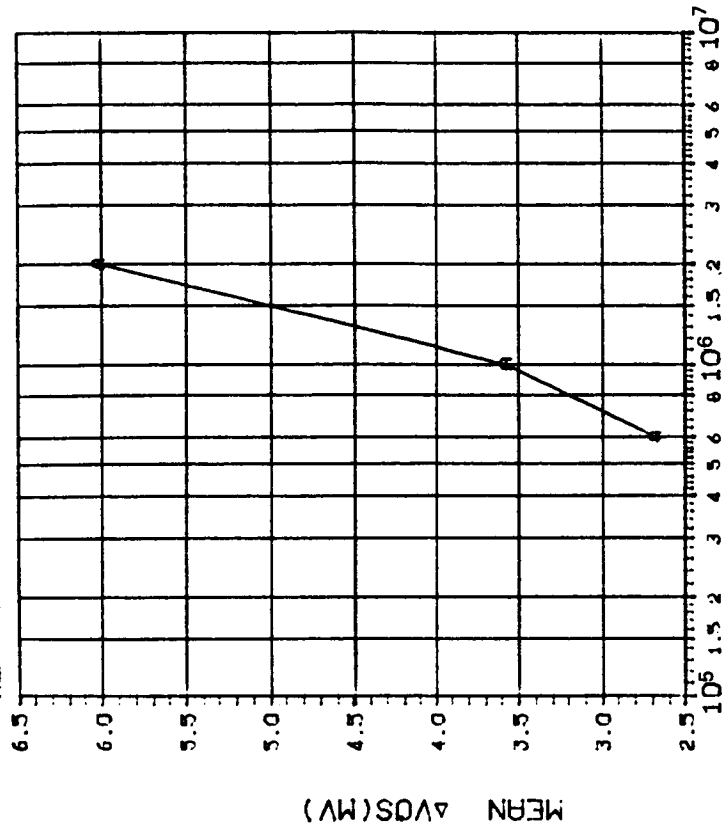
(1) ΔV_{OS} (MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.5147 .8342 1.105

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 1000-2 DATE CODE 118307

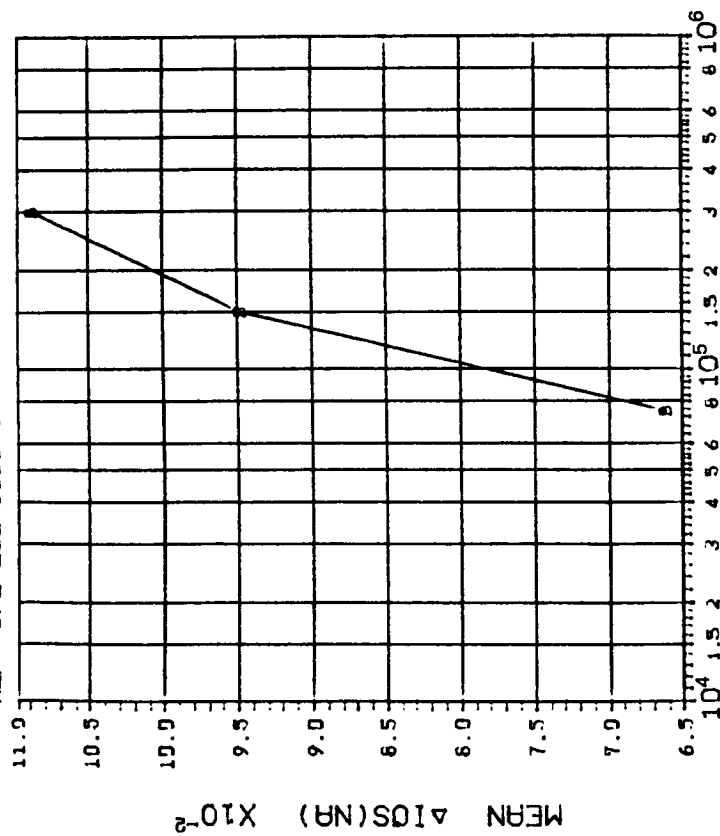


DOSE, rads(Si) 2.5 MeV electrons

(1) ΔV_{OS} (MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	1.784 3.474 6.331

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-1 DATE CODE 118307

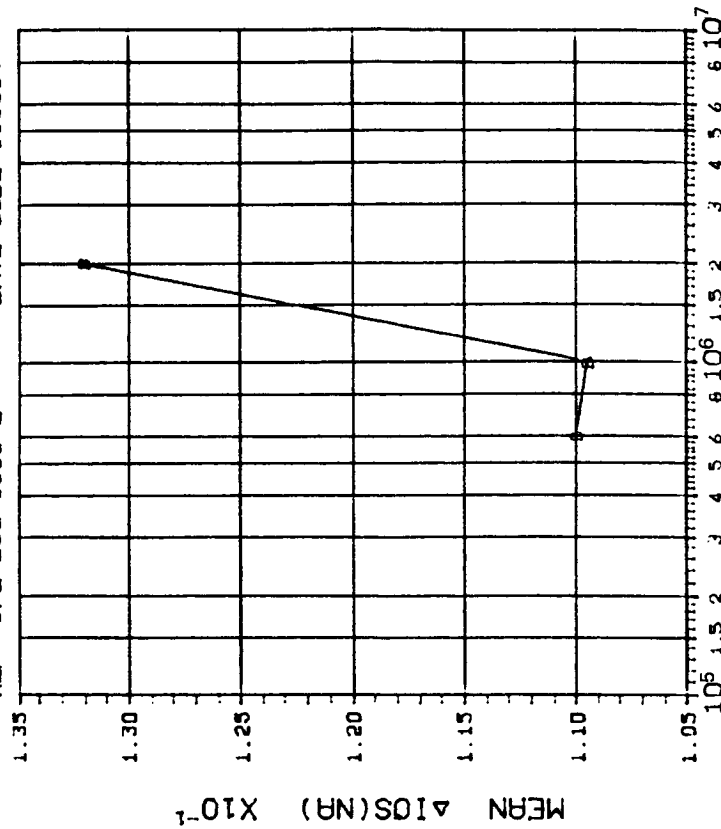


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	75 150 300
	.1146 .1721 .1988

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-2 DATE CODE 118307

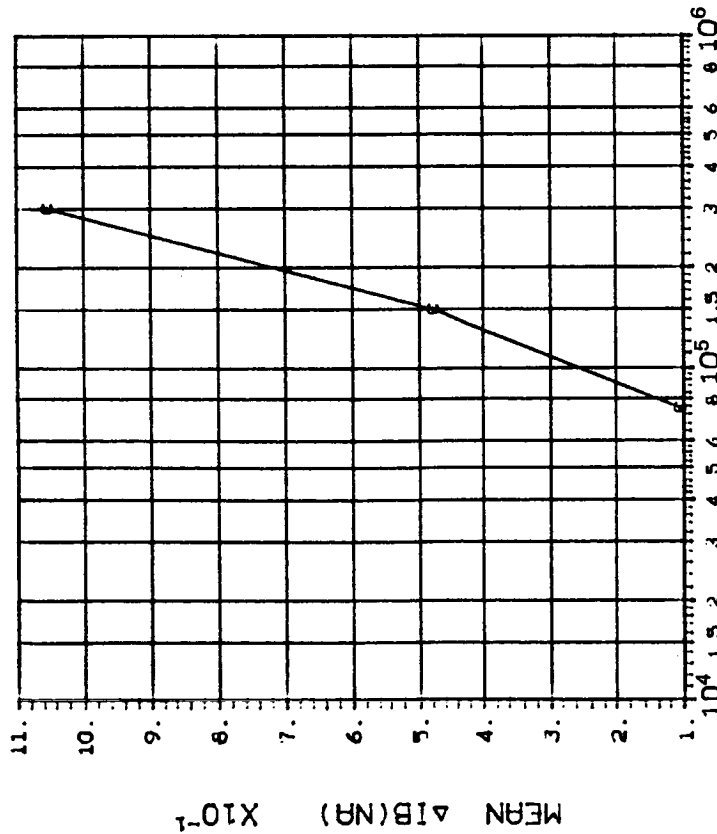


DOSE, rads(Si) 2.5 MeV electrons

(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	600 1000 2000
	.1755 .1426 .1721

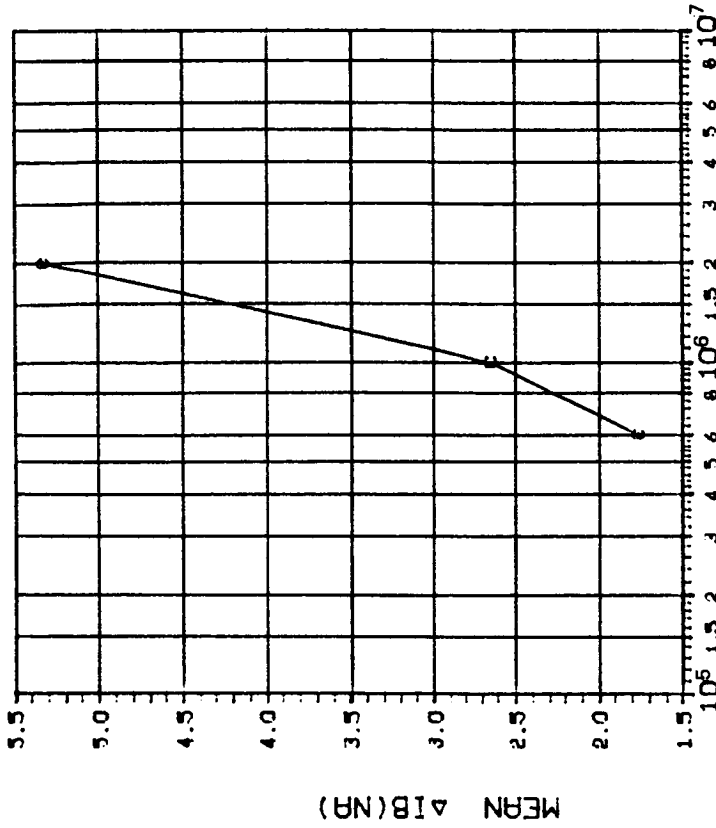
DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-1 DATE CODE 118307



DOSE, rads(Si) 2.5 MeV electrons
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
.2287 .3364 .6470	

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-2 DATE CODE 118307



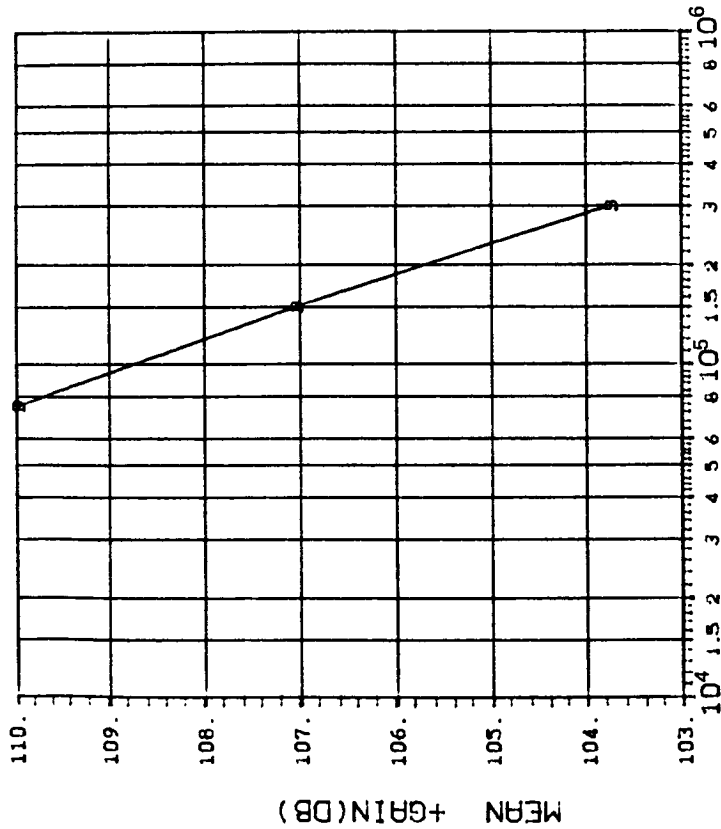
DOSE, rads(Si) 2.5 MeV electrons
 (3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600
	1000
	2000
1.714 3.724 8.793	

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 1000-1 DATE CODE 118307



DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

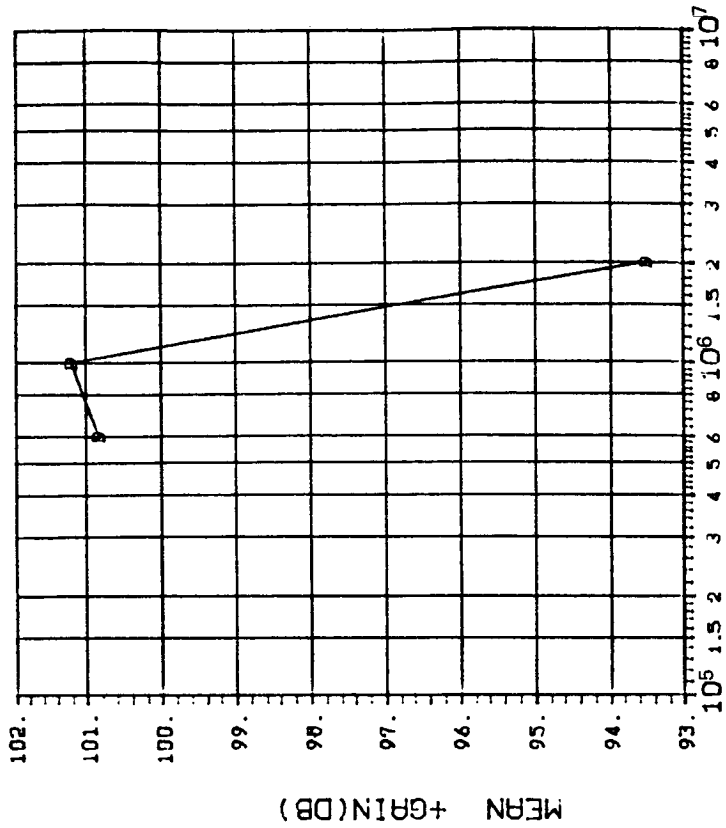
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	75 150 300

INITIAL MEAN VALUE +GAIN(DB) = 1.14X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-25-83

REF: JPL LOG 1000-2 DATE CODE 118307



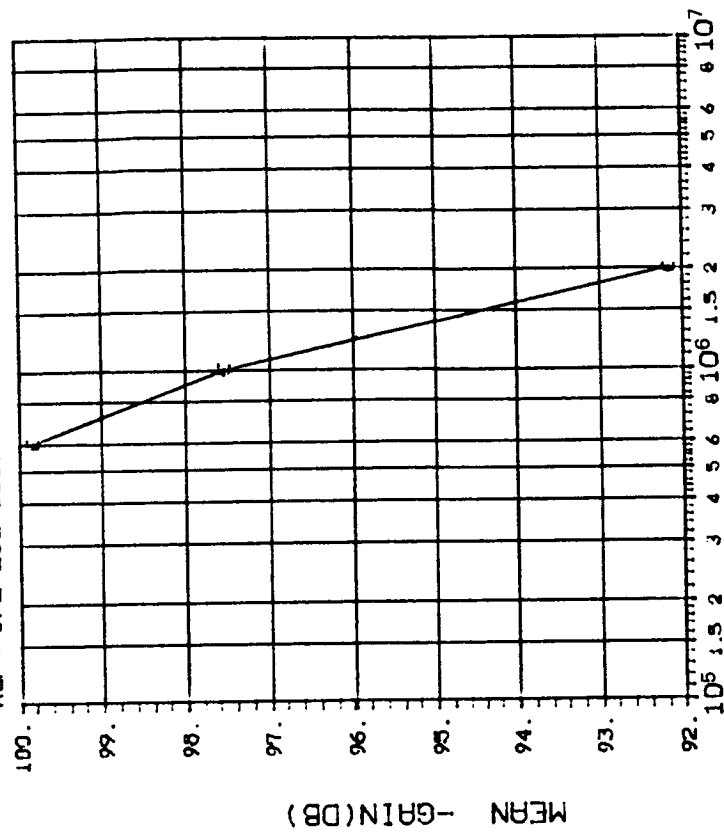
DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	600 1000 2000

INITIAL MEAN VALUE +GAIN(DB) = 1.14X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-2 DATE CODE 118307

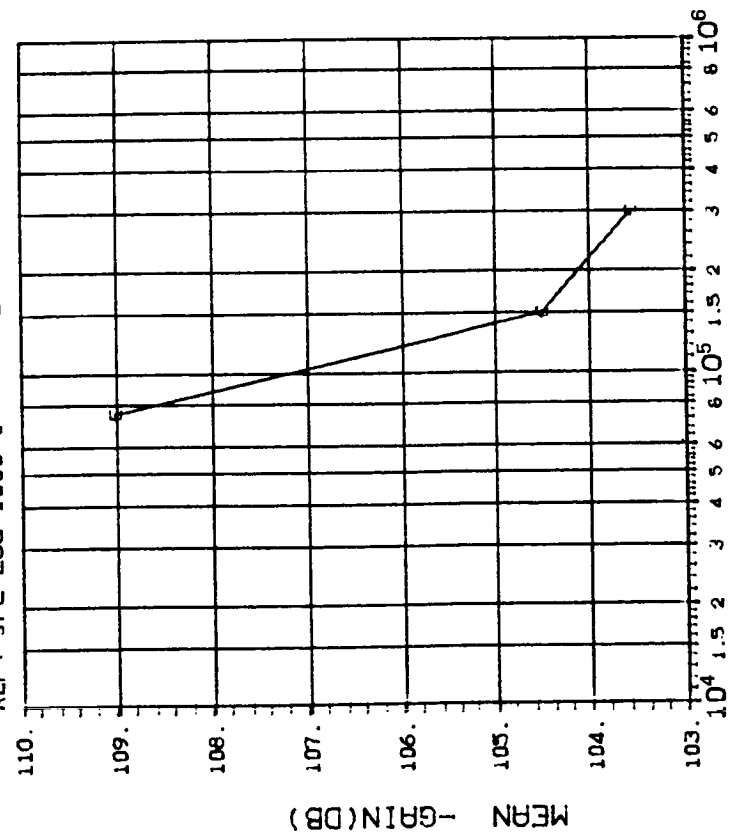


(5)--GAIN IN DB(5.MA LOAD, -10V): VS DOSE
 DOSE, rads(Si) 2.5 MeV electrons

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I_L (mA)	DOSE, kilorads(Si)
E	5.00	600 1000 2000
		6.596 10.99 10.17

INITIAL MEAN VALUE -GAIN(DB) = $1.15 \times 10^{+2}$

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 03-25-83
 REF: JPL LOG 1000-1 DATE CODE 118307



(5)--GAIN IN DB(5.MA LOAD, -10V): VS DOSE
 DOSE, rads(Si) 2.5 MeV electrons

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I_L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300
		6.165 6.827 13.12

INITIAL MEAN VALUE -GAIN(DB) = $1.15 \times 10^{+2}$

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-1 DATE CODE 118307

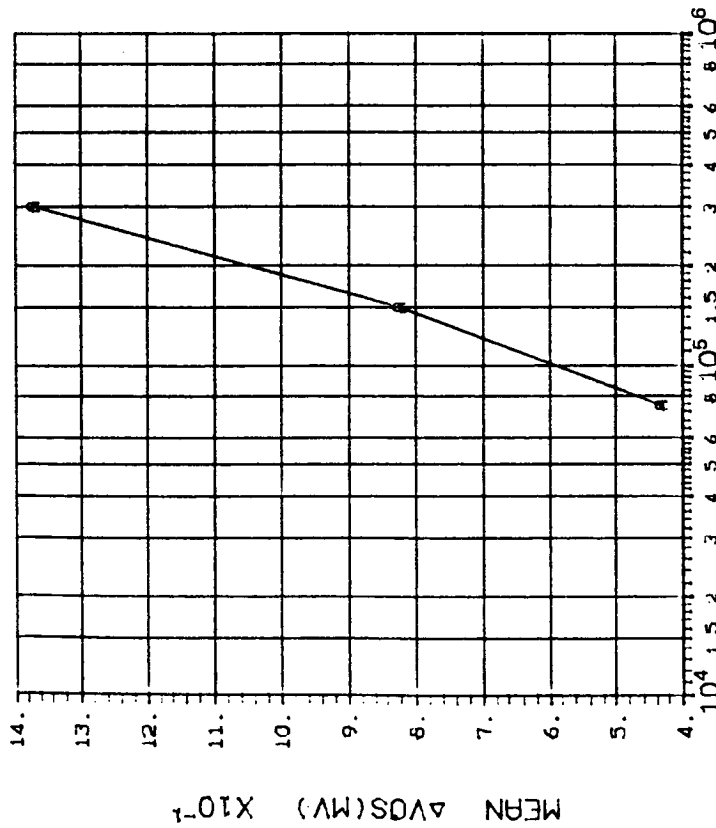


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.2433 .3635 .5767

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-2 DATE CODE 118307

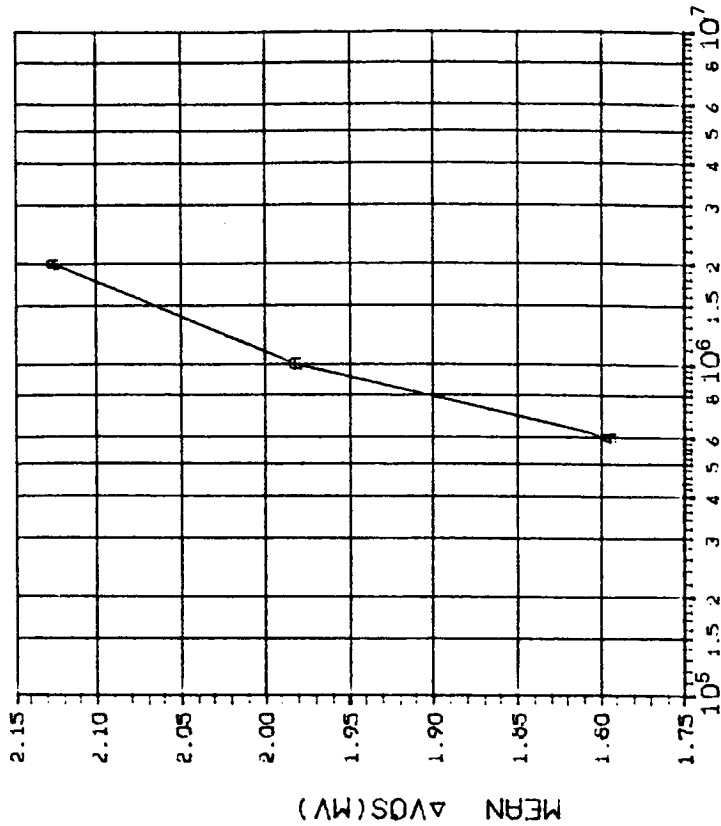


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.7465 .6033 .6033

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-2 DATE CODE 118307

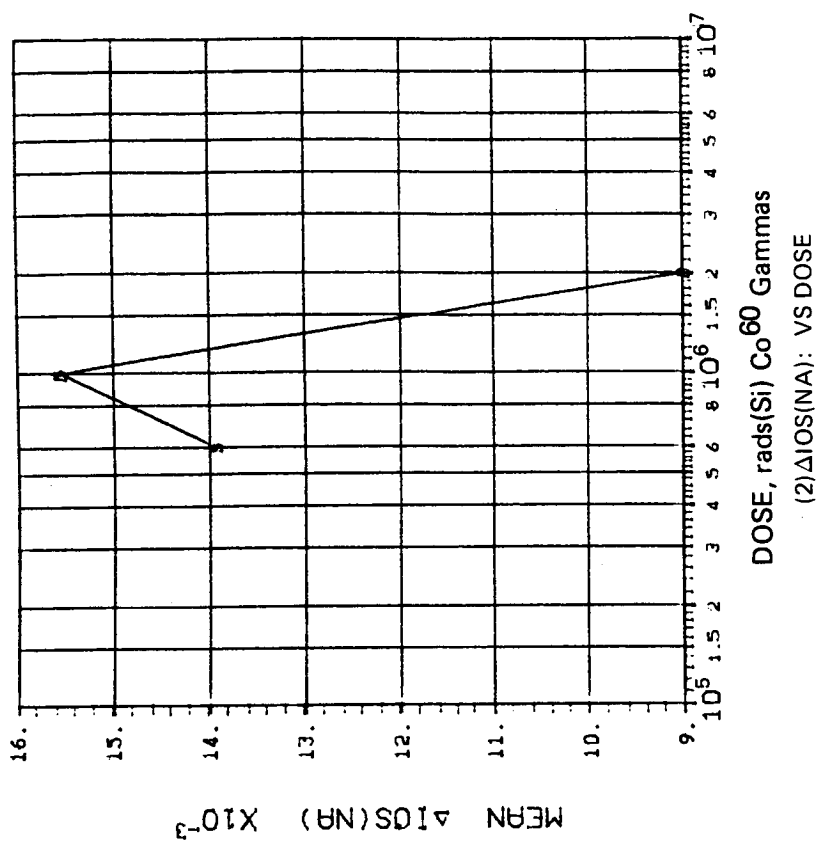


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000
B	.0021	.0080
		.0071

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-1 DATE CODE 118307

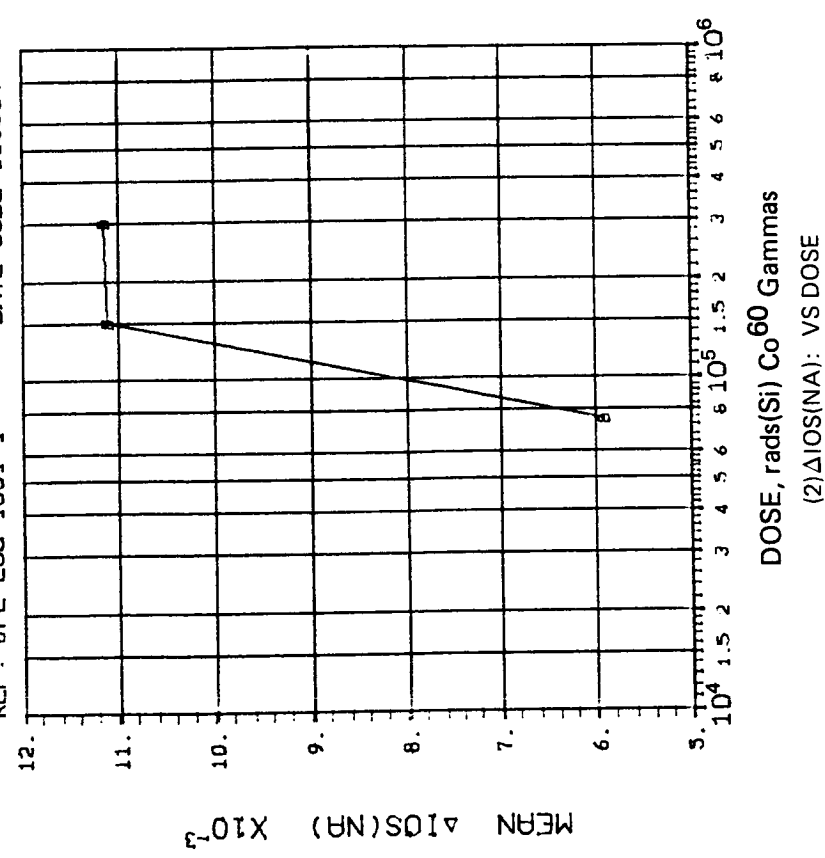
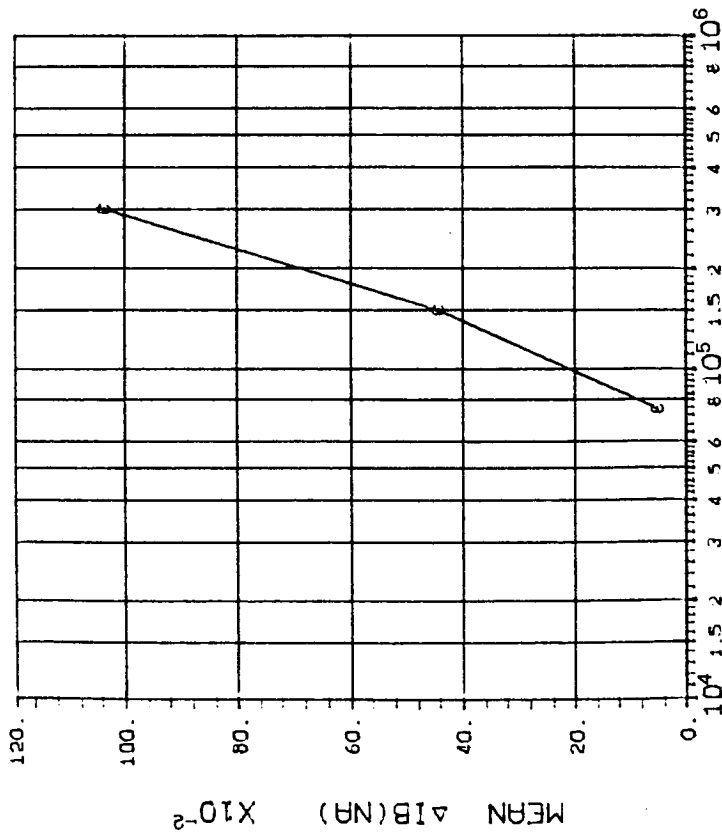


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150
		300
B	.0026	.0043
		.0103

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1001-1 DATE CODE 118307



DOSE, rads(Si) Co⁶⁰ Gammas

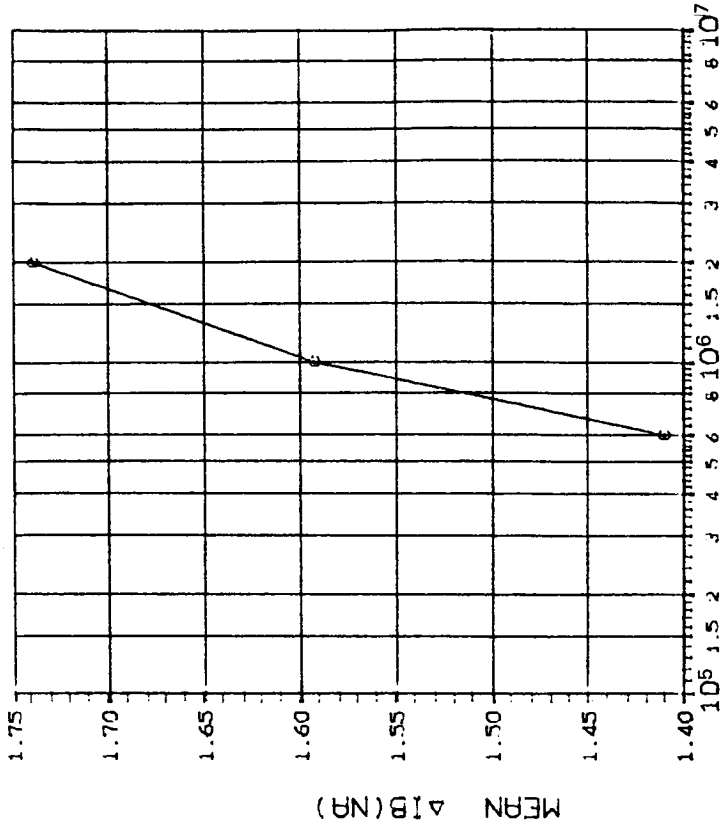
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
.3313 .2587 .2757	

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1001-2 DATE CODE 118307



DOSE, rads(Si) Co⁶⁰ Gammas

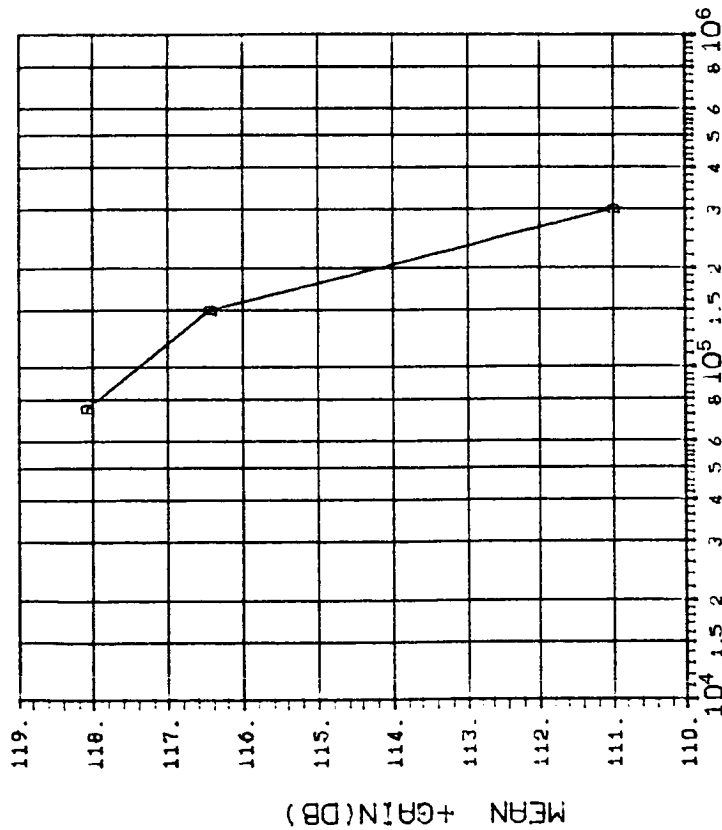
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600
	1000
	2000
.5268 .6194 .7119	

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1001-1 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas

(4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

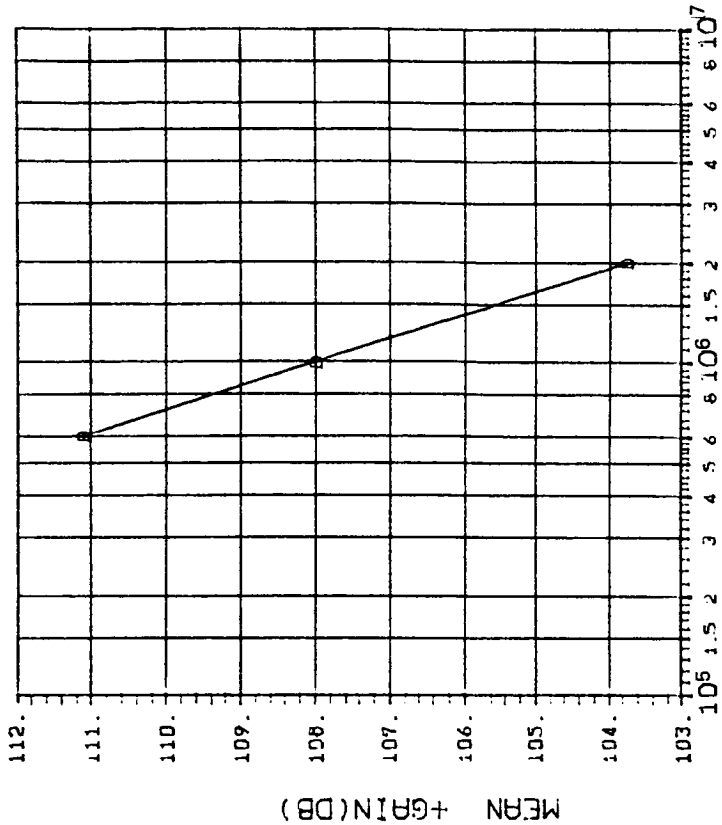
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	75 150 300

INITIAL MEAN VALUE +GAIN(DB) = 1.17X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1001-2 DATE CODE 118307



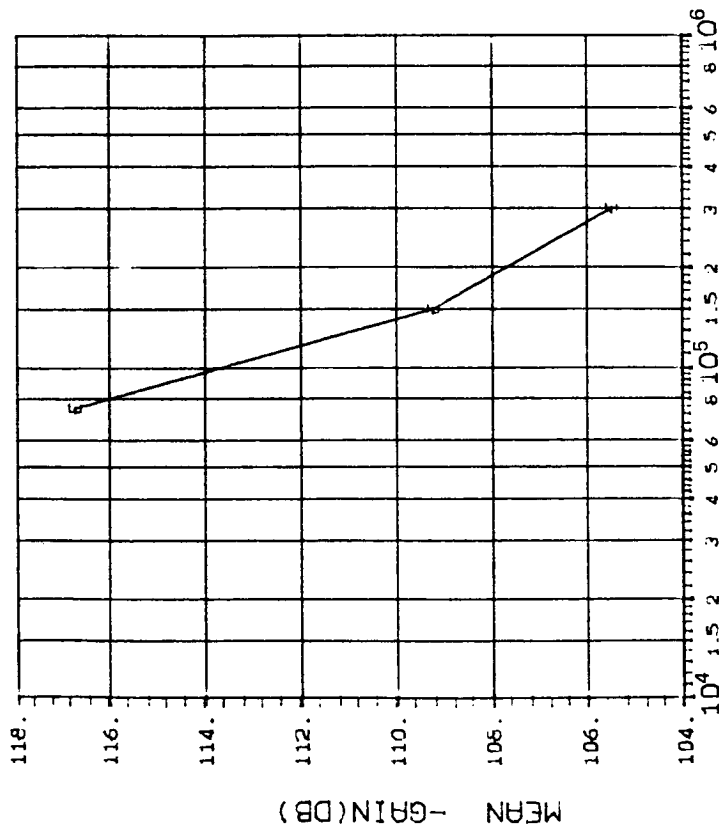
DOSE, rads(Si) Co 60 Gammas

(4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	600 1000 2000

INITIAL MEAN VALUE +GAIN(DB) = 1.17X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-1 DATE CODE 118307



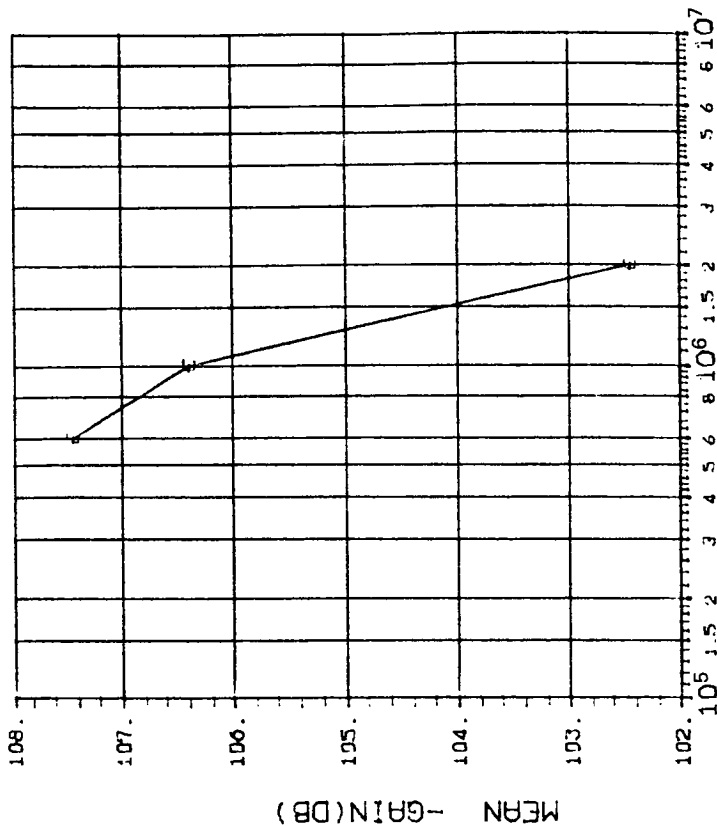
DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300
		10.93 8.527 7.561

INITIAL MEAN VALUE -GAIN(DB) = 1.18X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1001-2 DATE CODE 118307



DOSE, rads(Si) Co⁶⁰ Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V): VS DOSE

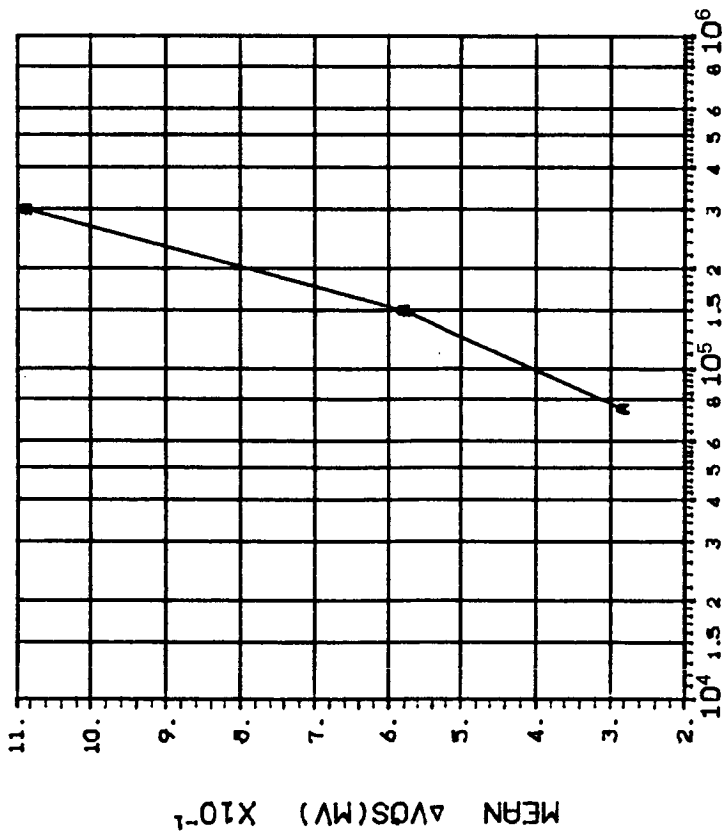
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	600 1000 2000
		12.88 12.18 7.090

INITIAL MEAN VALUE -GAIN(DB) = 1.18X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1002-1 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas

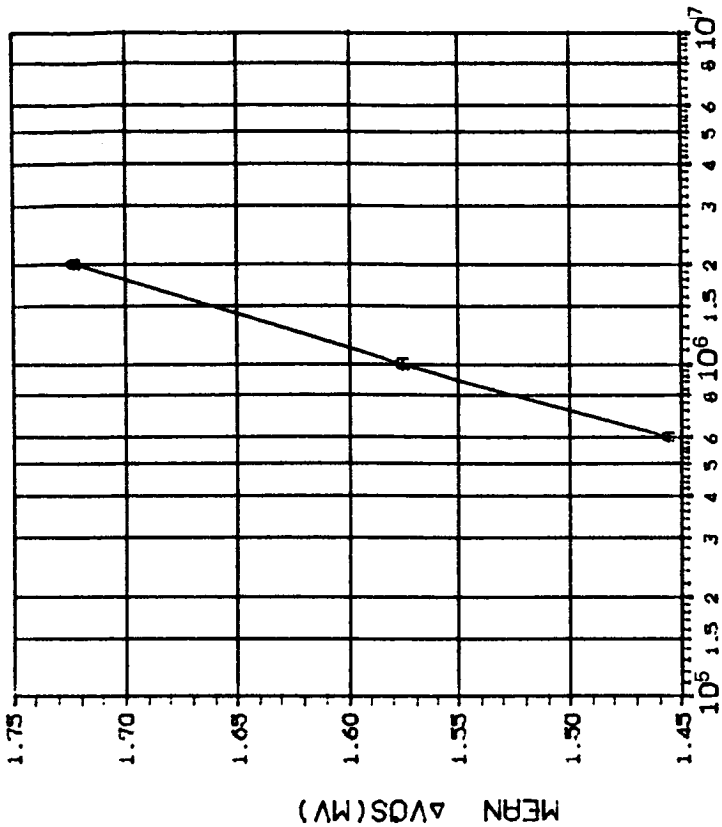
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	75 150 300
	.2116 .3805 .7150

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1002-2 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas

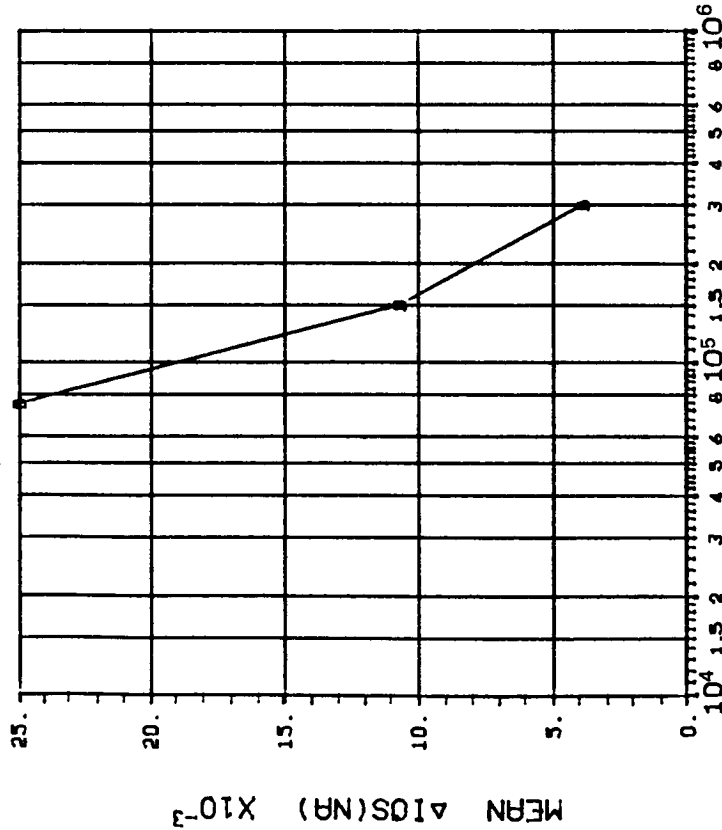
(1)ΔVOS(MV): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	1.070 1.306 1.581

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1002-1 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas

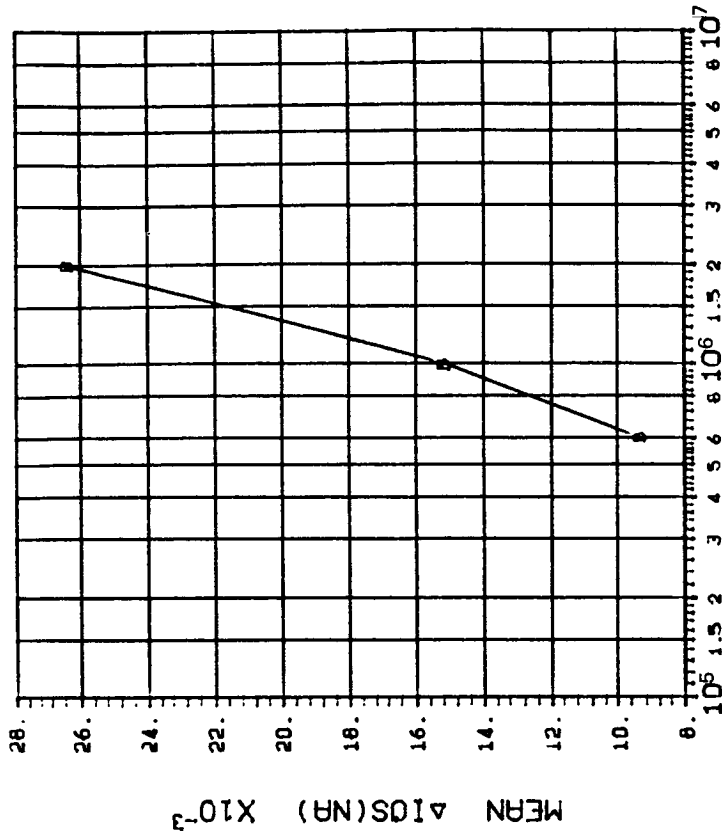
(2) Δ IOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	300
	.0068	.0127 .0034

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1002-2 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas

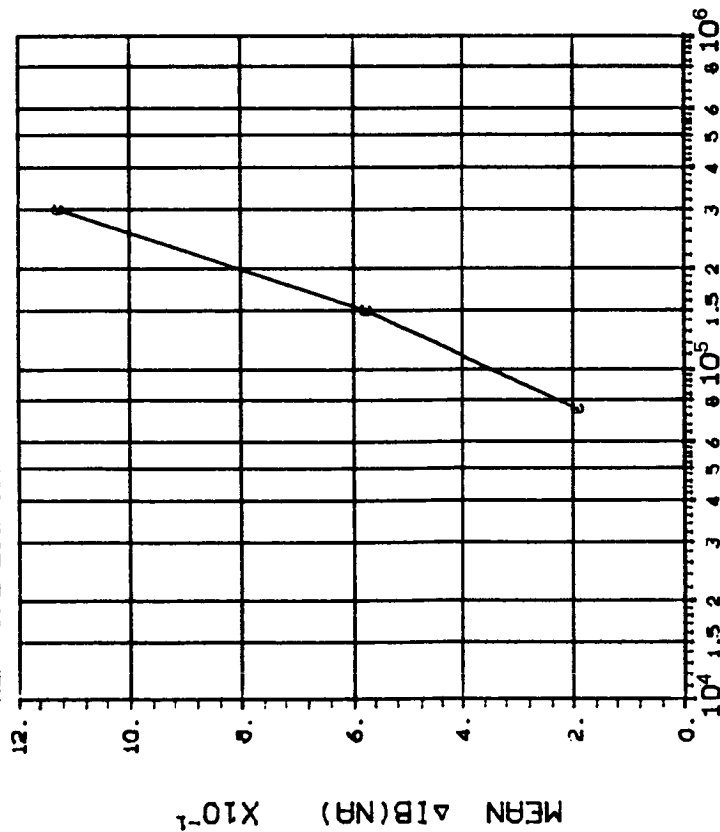
(2) Δ IOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	600	1000 2000
	.0082	.0094 .0141

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1002-1 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas

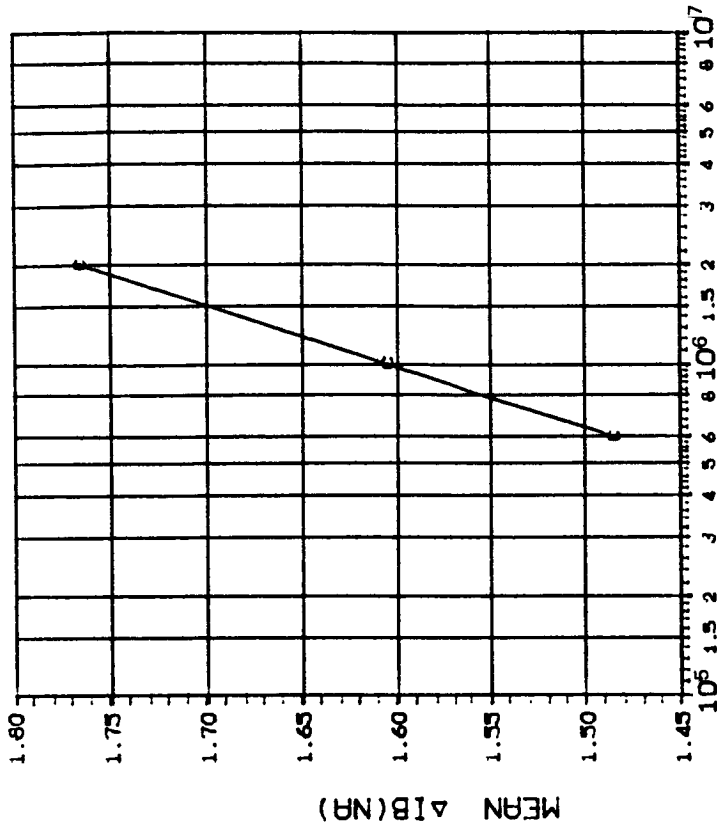
(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300
C	.1952	.2859 .5262

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1002-2 DATE CODE 118307

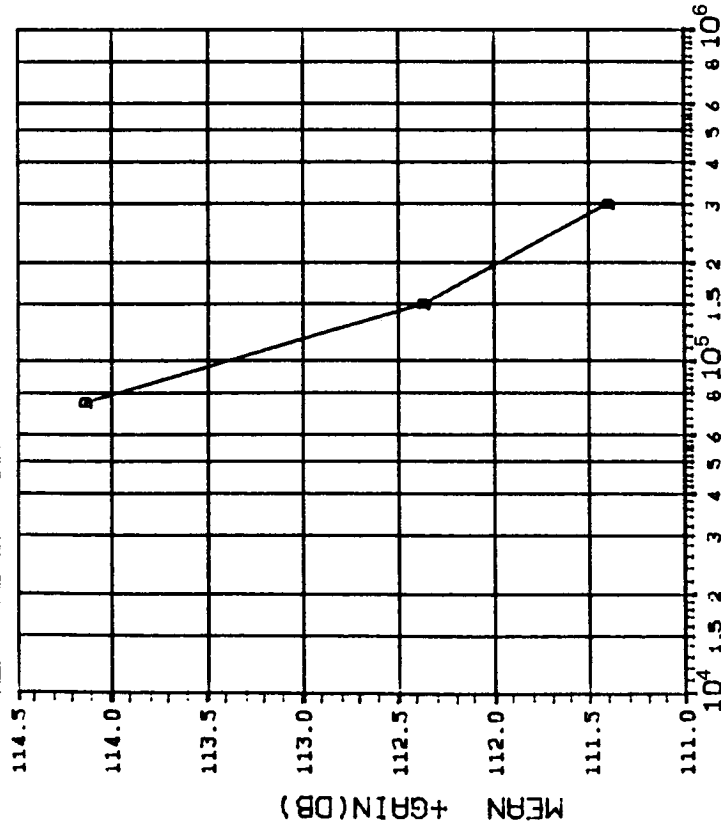


DOSE, rads(Si) Co 60 Gammas

(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	600	1000 2000
C	.9054	1.153 1.412

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1002-1 DATE CODE 118307

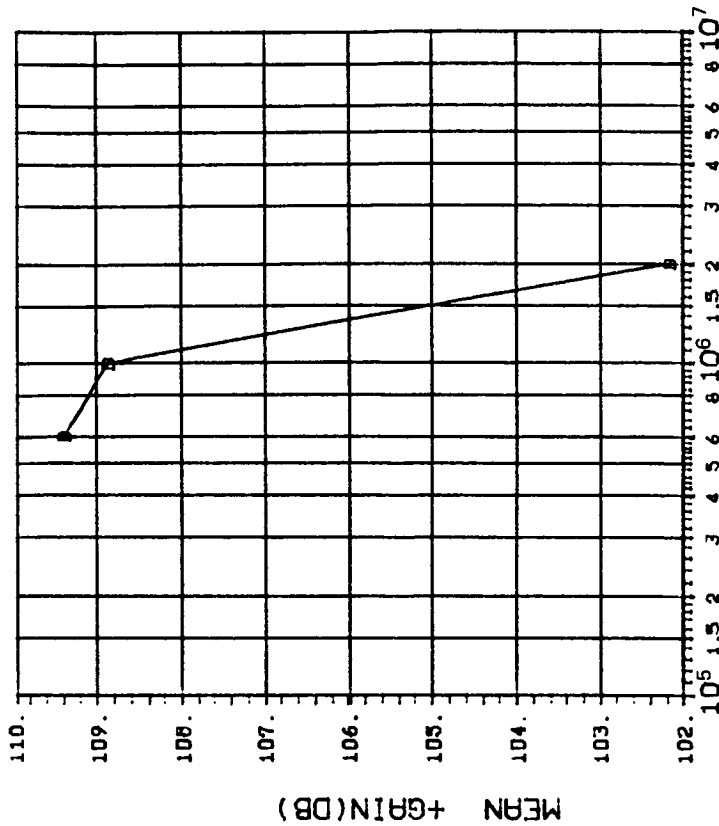


DOSE, rads(Si) Co 60 Gammas
 (4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	75 150 300
		10.26 9.698 11.97

INITIAL MEAN VALUE +GAIN(DB) = 1.12X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 1002-2 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas
 (4)+GAIN IN DB(5.MA LOAD,+10V): VS DOSE

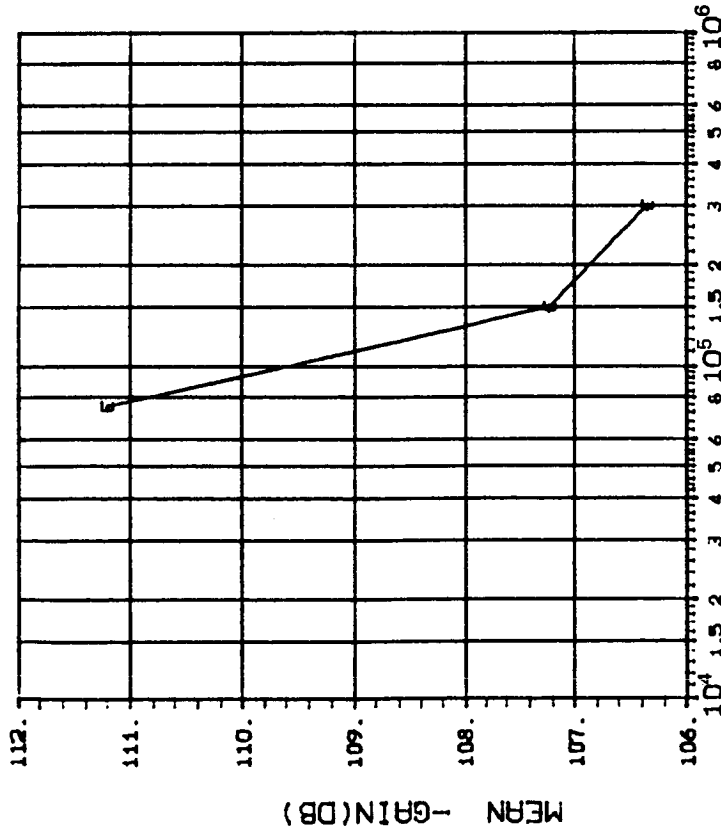
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	600 1000 2000
		10.90 10.80 7.280

INITIAL MEAN VALUE +GAIN(DB) = 1.12X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1002-1 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V): VS DOSE

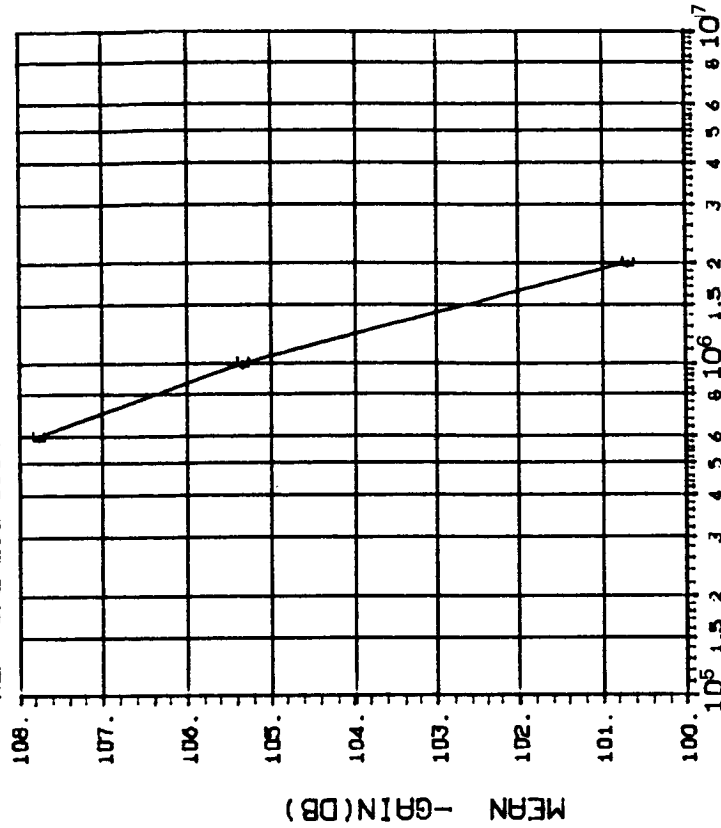
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	1 _L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300
		11.13 9.387 12.07

INITIAL MEAN VALUE -GAIN(DB) = $1.11 \times 10^{+2}$

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 1002-2 DATE CODE 118307



DOSE, rads(Si) Co 60 Gammas

(5)-GAIN IN DB(5.MA LOAD, -10V): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	1 _L (mA)	DOSE, kilorads(Si)
E	5.00	600 1000 2000
		13.72 11.47 9.846

INITIAL MEAN VALUE -GAIN(DB) = $1.11 \times 10^{+2}$

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-24-83
REF: JPL LOG 0974-1 DATE CODE 118239

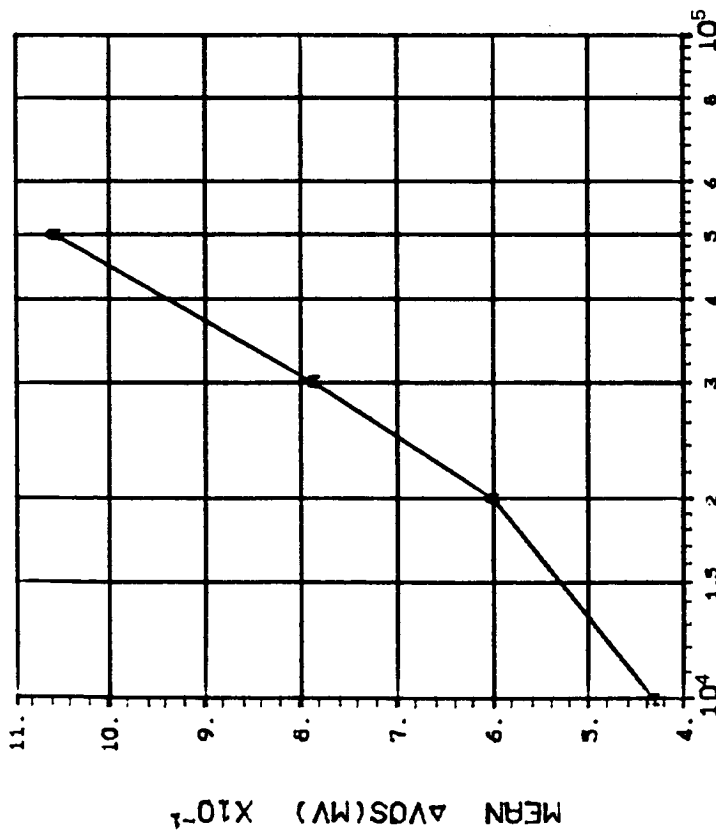


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	10	20 30 50
A	.5556	.6769 .6191 1.036

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-24-83
REF: JPL LOG 0974-2 DATE CODE 118239

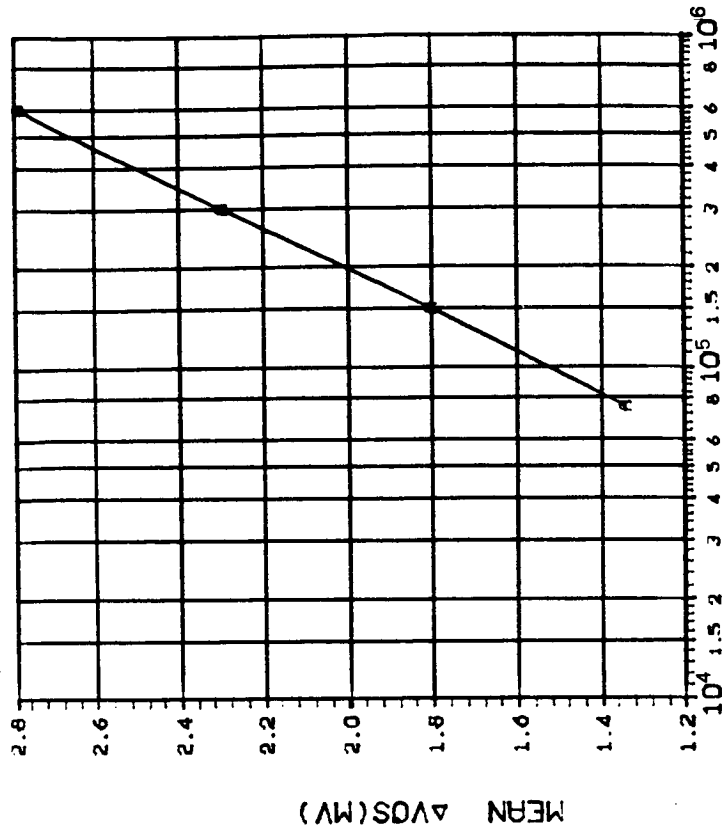
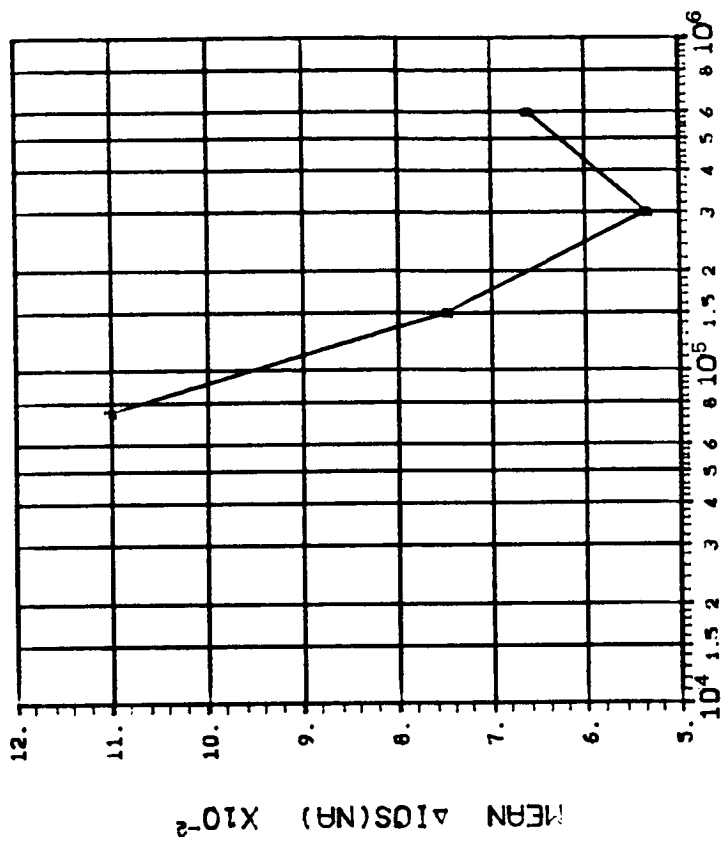


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600
A	1.279	1.633 1.941 2.153

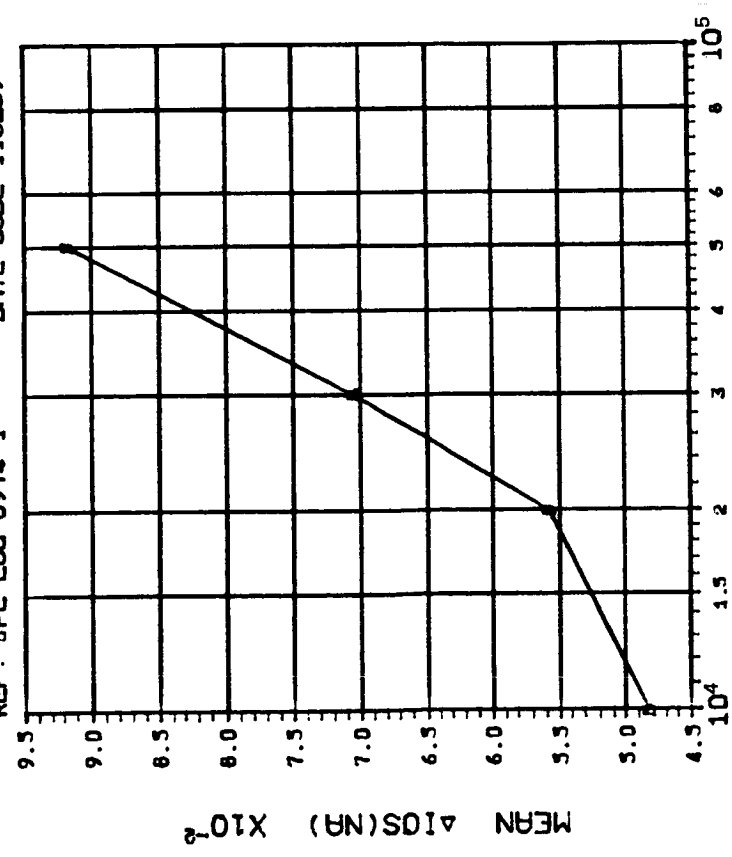
DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0974-2 DATE CODE 118239



DOSE, rads(Si) 2.5 MeV electrons
 (2) $\Delta IOS(NR)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	150 300 600
	.2326	.1211 .1075 .1176

DEVICE TYPE: OPA-100 FET OP AMP
 MFG: BUB 5 DEVICES TEST DATE 03-24-83
 REF: JPL LOG 0974-1 DATE CODE 118239



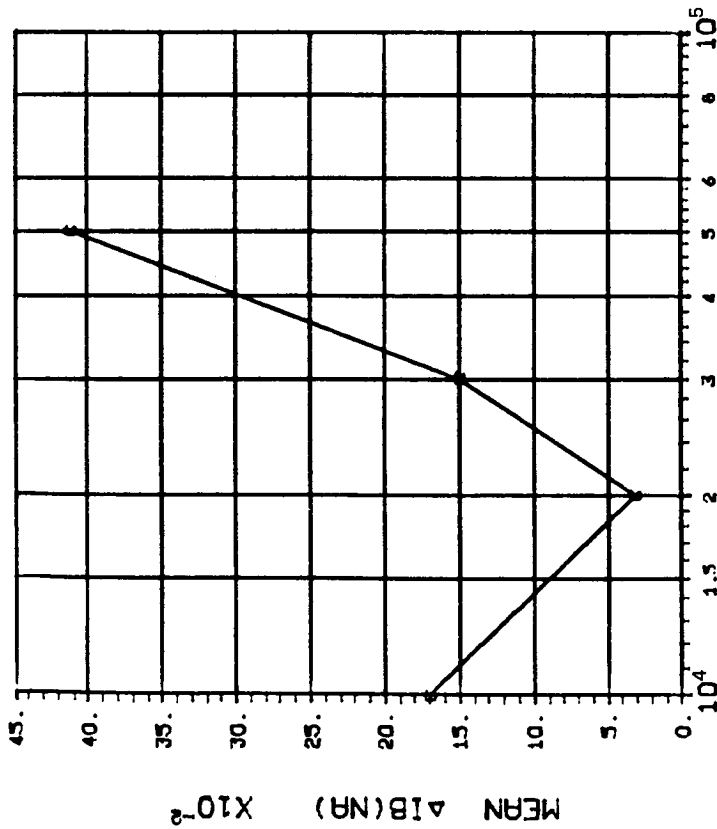
DOSE, rads(Si) 2.5 MeV electrons
 (2) $\Delta IOS(NR)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	10	20 30 50
	.0923	.1136 .1468 .1820

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0974-1 DATE CODE 118239



DOSE, rads(Si) 2.5 MeV electrons

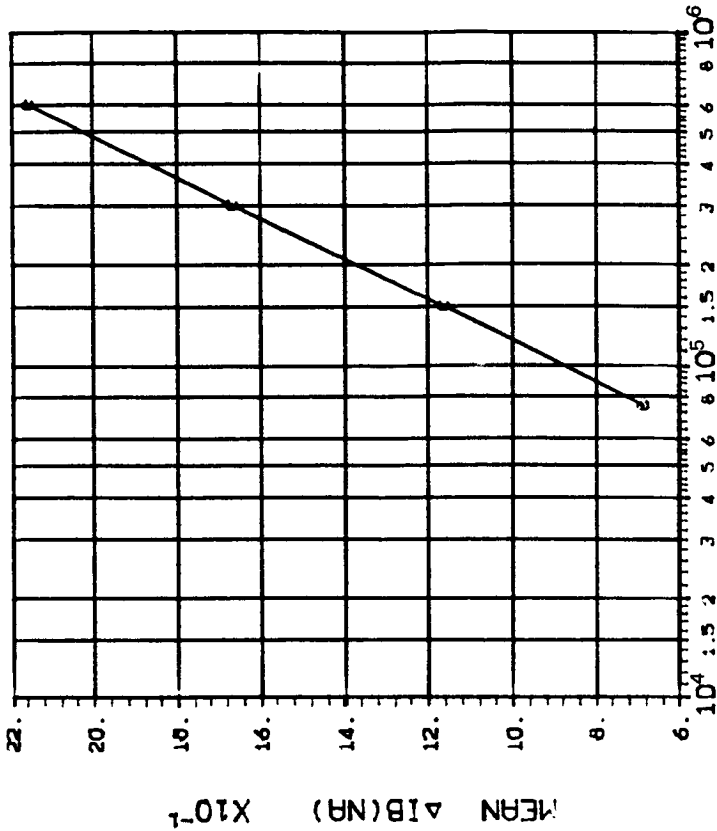
(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	10	20 30 50
C	.2147	.2018 .2347 .3965

DEVICE TYPE: OPA-100 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0974-2 DATE CODE 118239



DOSE, rads(Si) 2.5 MeV electrons

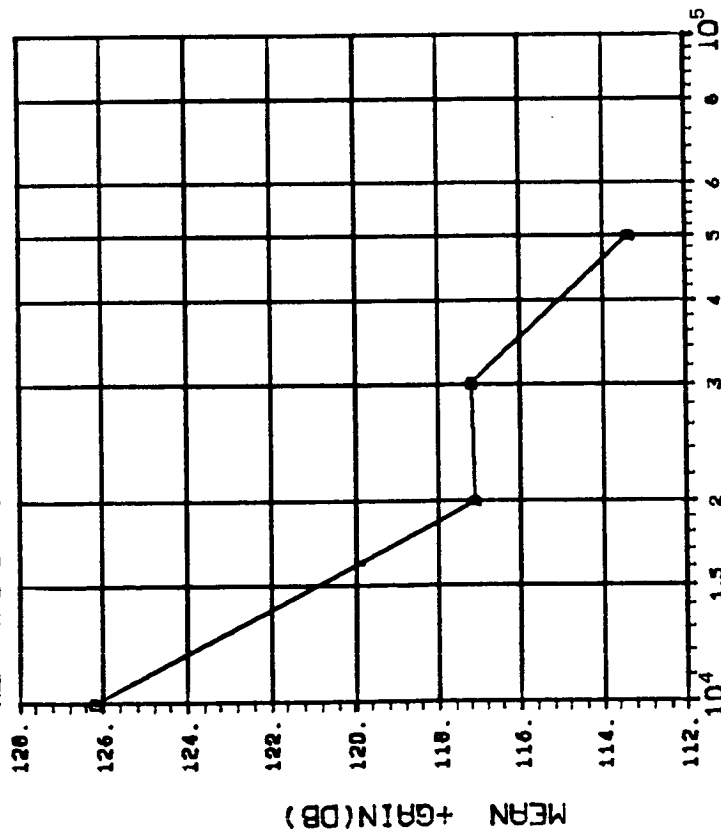
(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	75	150 300 600
C	.6208	.9357 1.229 1.465

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0974-1 DATE CODE 118239



DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

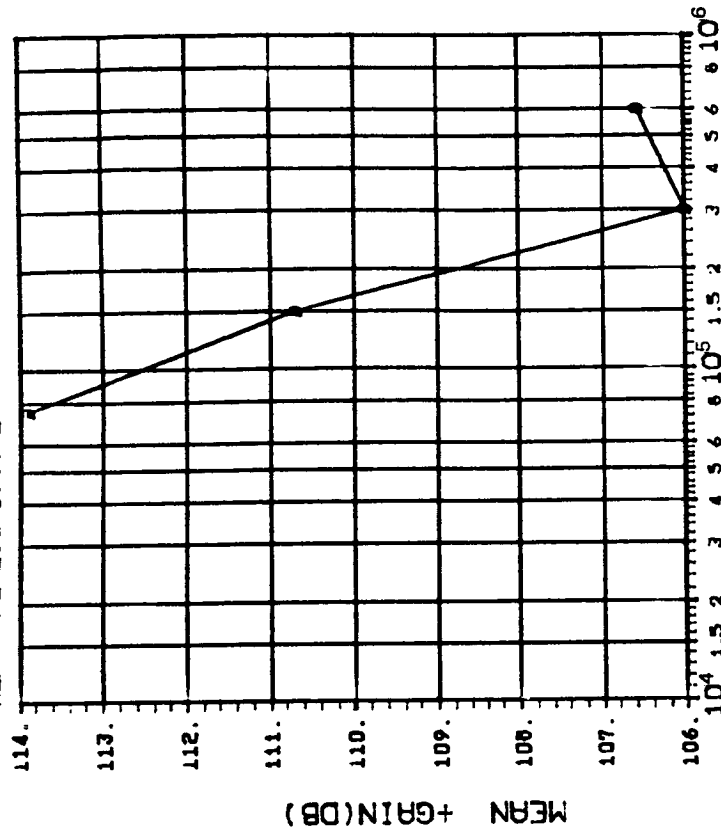
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	10 20 30 50
		14.03 15.26 11.96 14.77

INITIAL MEAN VALUE +GAIN(DB) = 1.16X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0974-2 DATE CODE 118239



DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN IN DB(5.MA LOAD,+10V) : VS DOSE

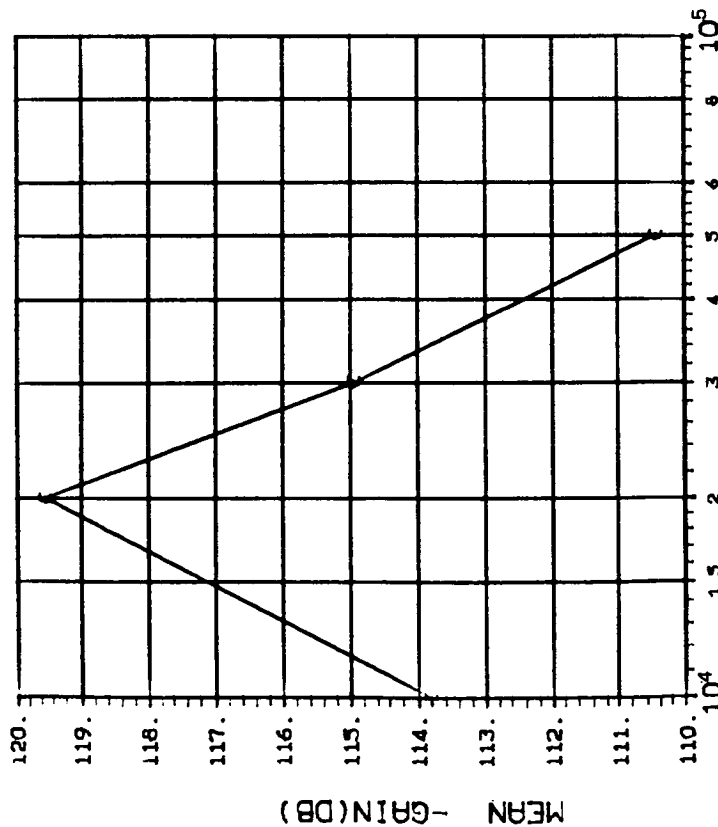
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	75 150 300 600
		14.07 12.52 6.979 7.429

INITIAL MEAN VALUE +GAIN(DB) = 1.16X10⁺²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0974-1 DATE CODE 118239



DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

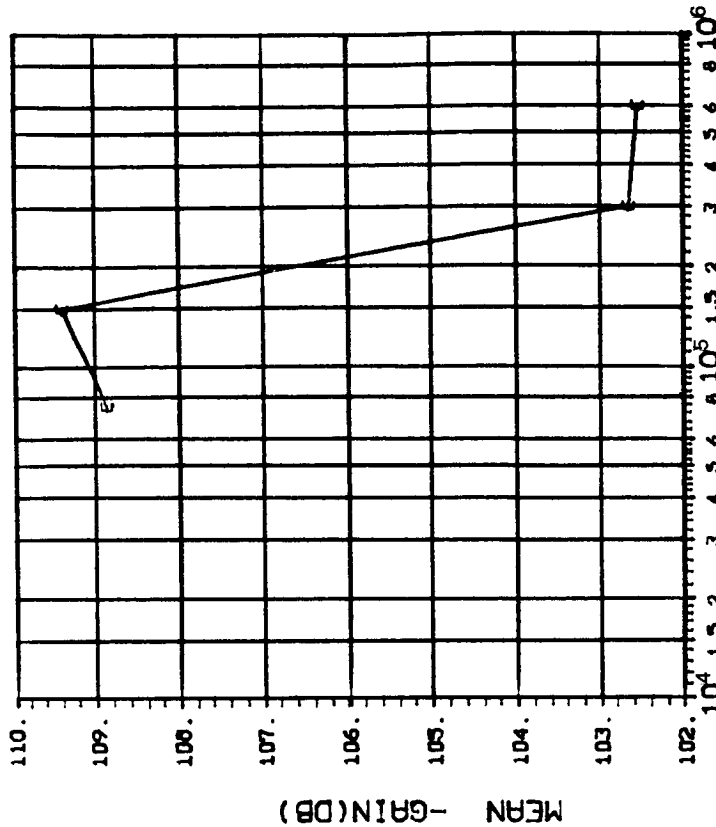
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	10 20 30 50
		12.41 17.08 18.26 10.61

INITIAL MEAN VALUE -GAIN(DB) = 1.10X10¹²

DEVICE TYPE: OPA-100 FET OP AMP

MFG: BUB 5 DEVICES TEST DATE 03-24-83

REF: JPL LOG 0974-2 DATE CODE 118239



DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN IN DB(5.MA LOAD, -10V) : VS DOSE

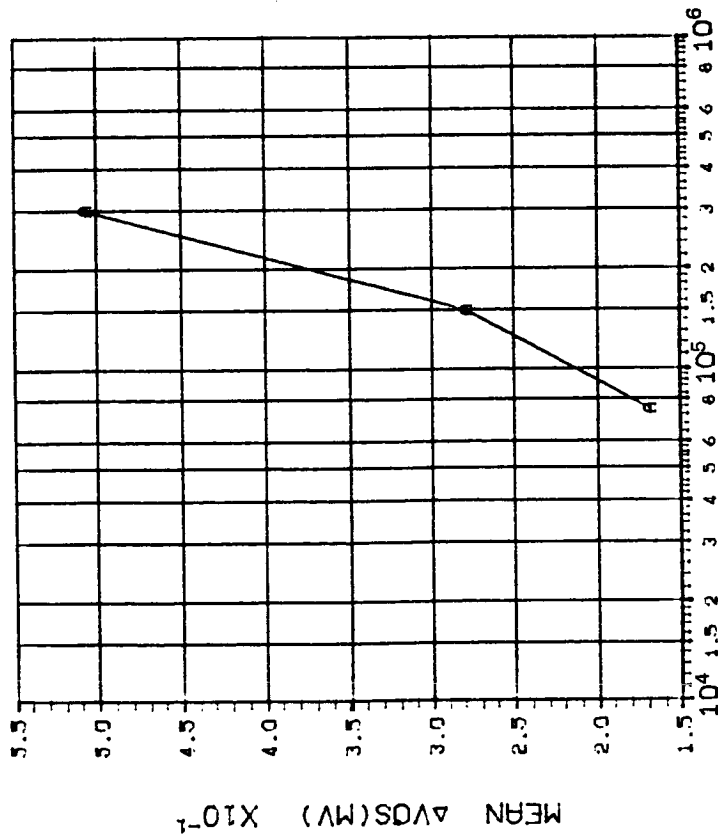
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300 600
		12.48 16.43 8.738 10.53

INITIAL MEAN VALUE -GAIN(DB) = 1.10X10¹²

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-84

REF: JPL LOG 1035-1 DATE CODE 8340



DOSE, rad(Si) 2.5 MeV electrons

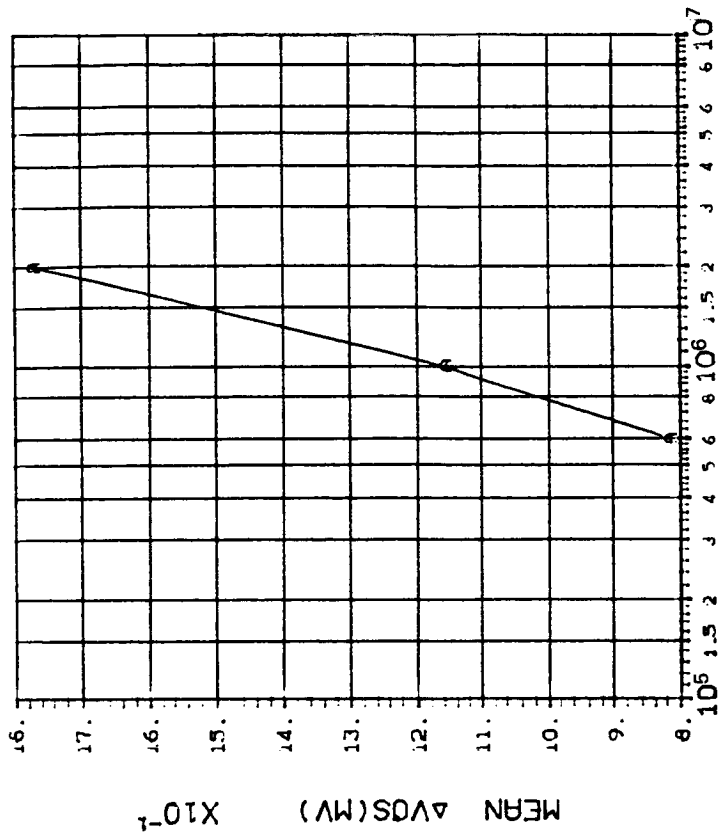
(1) $\Delta V_{OS}(MV)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	75 150 300	
	.0979 .1931 .3073	

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-84

REF: JPL LOG 1035-2 DATE CODE 8340



DOSE, rad(Si) 2.5 MeV electrons

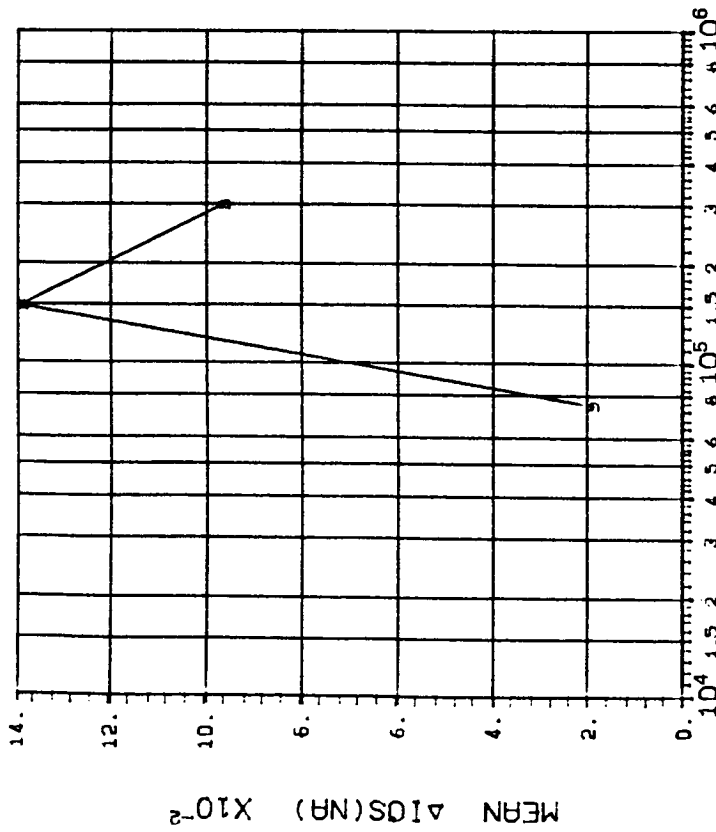
(1) $\Delta V_{OS}(MV)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
A	600 1000 2000	
	.4605 .6261 .6856	

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-84

REF: JPL LOG 1035-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

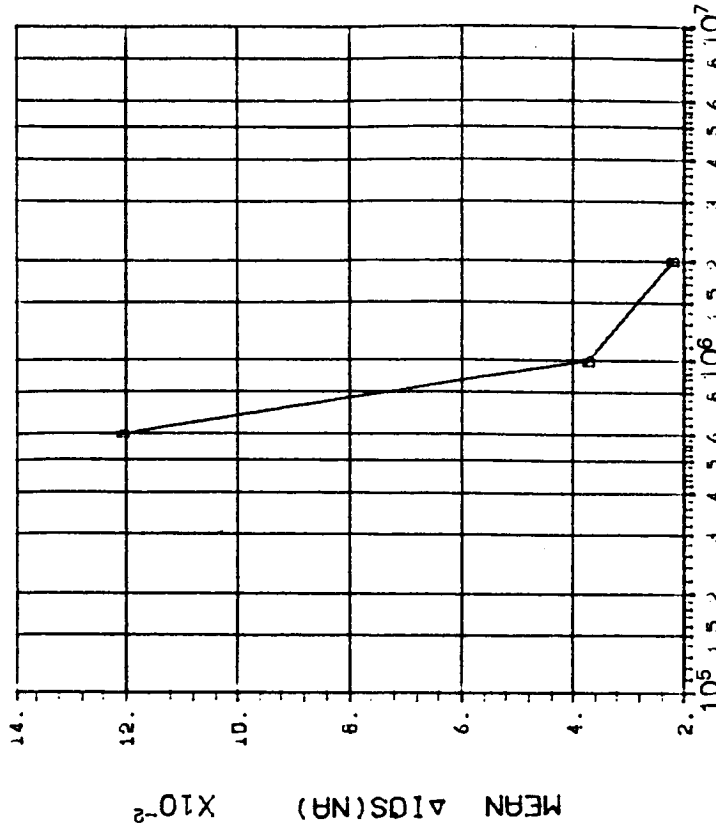
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	75	150
	300	300
	.0328	.1662

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-84

REF: JPL LOG 1035-2 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

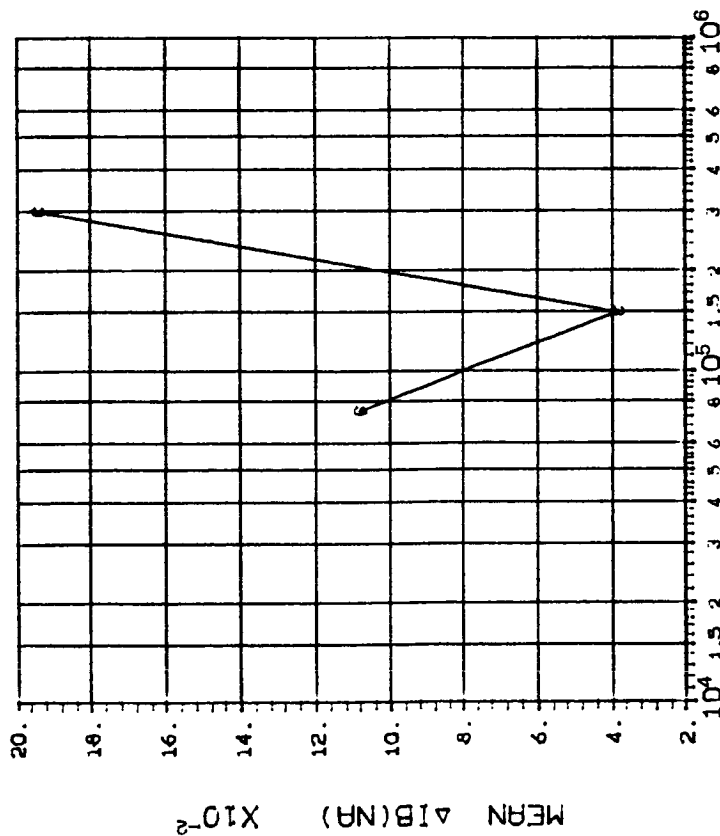
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
B	600	1000
	2000	2000
	.2451	.0447

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-84

REF: JPL LOG 1035-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

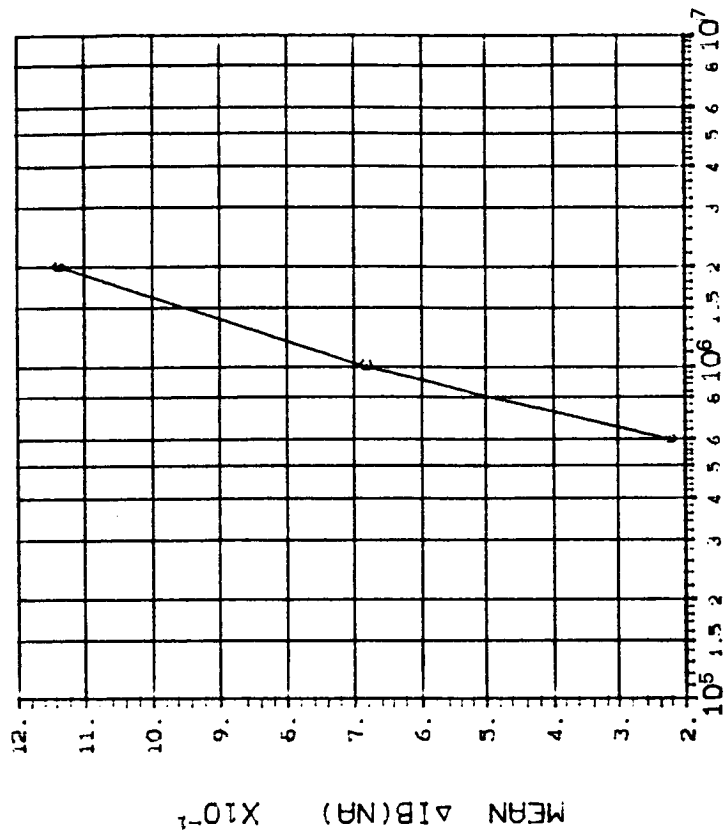
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	75	.1148
	150	.1365
	300	.3080

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-84

REF: JPL LOG 1035-2 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

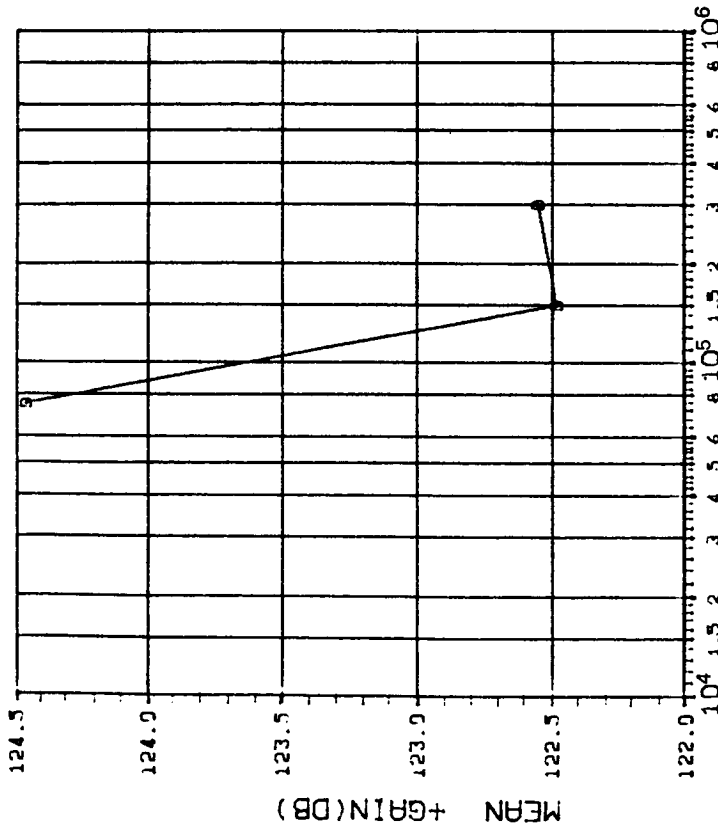
(3)ΔIB(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	600	.2851
	1000	.5882
	2000	.7354

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-84

REF: JPL LOG 1035-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN(DB) VS DOSE

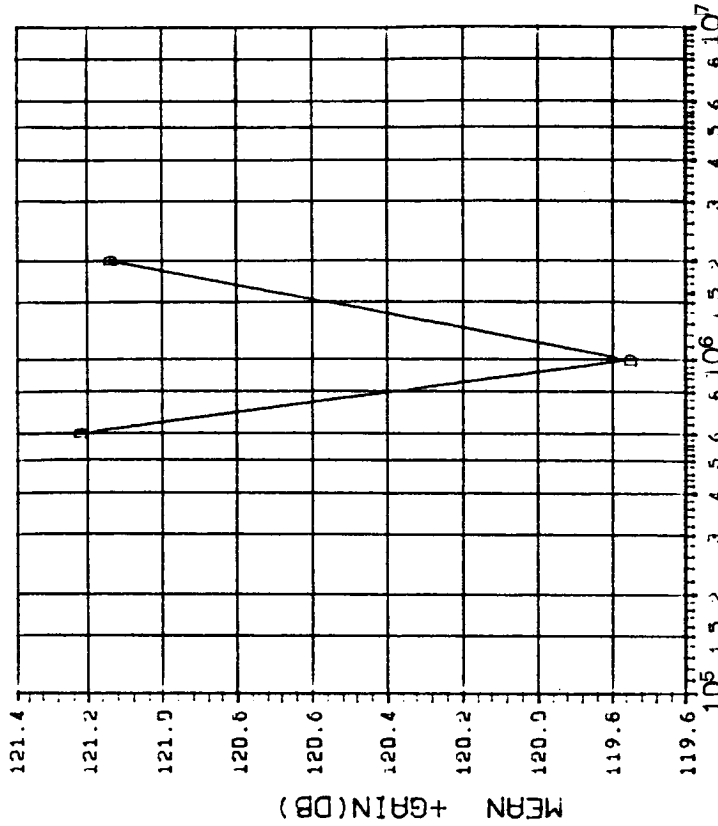
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	2.617 2.691 1.990

INITIAL MEAN VALUE +GAIN(DB) = 1.25X10⁺²

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-84

REF: JPL LOG 1035-2 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

(4)+GAIN(DB) VS DOSE

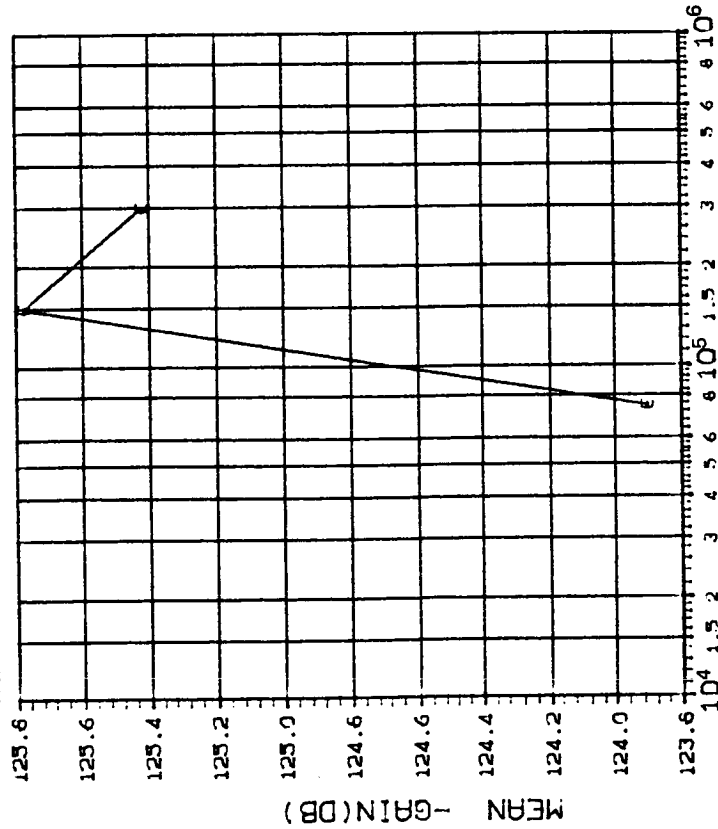
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	2.753 1.455 4.677

INITIAL MEAN VALUE +GAIN(DB) = 1.25X10⁺²

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-84

REF: JPL LOG 1035-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

(51)-GAIN(DB) VS DOSE

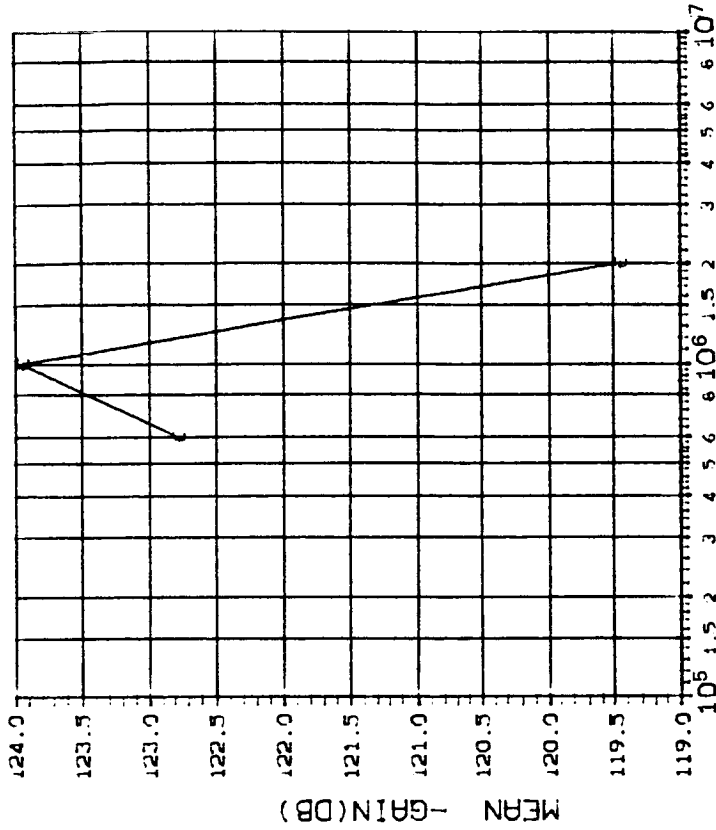
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300
		6.371 9.324 9.911

INITIAL MEAN VALUE -GAIN(DB) = 1.21X10⁺²

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 1-23-84

REF: JPL LOG 1035-2 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

(5)-GAIN(DB) VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	600 1000 2000
		6.570 10.51 5.701

INITIAL MEAN VALUE -GAIN(DB) = 1.21X10⁺²

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 12-22-83

REF: JPL LOG 1036-1 DATE CODE 8340

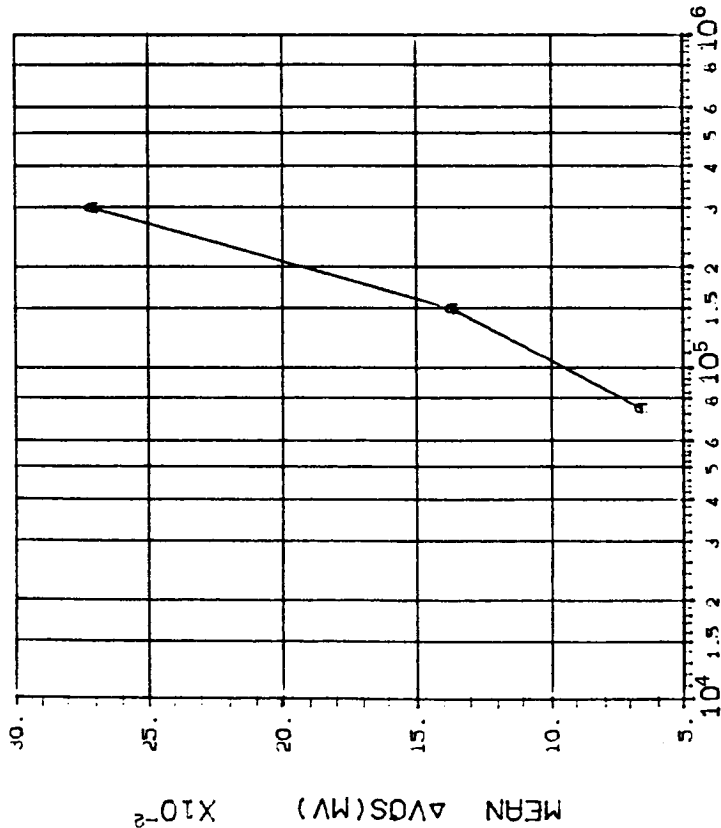


TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
A	75 150 300
	.0896 .1685 .2994

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 12-22-83

REF: JPL LOG 1036-2 DATE CODE 8340

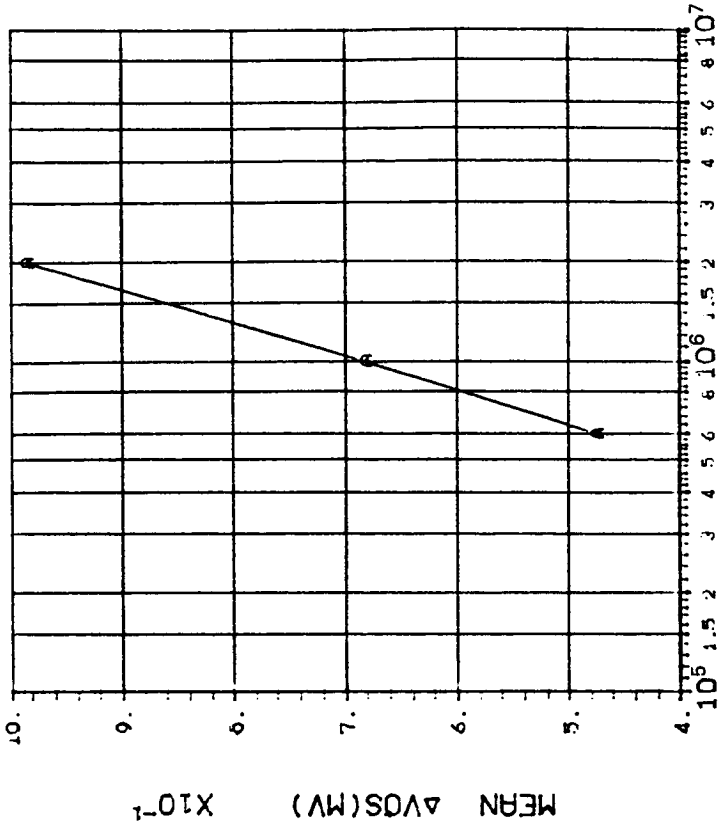


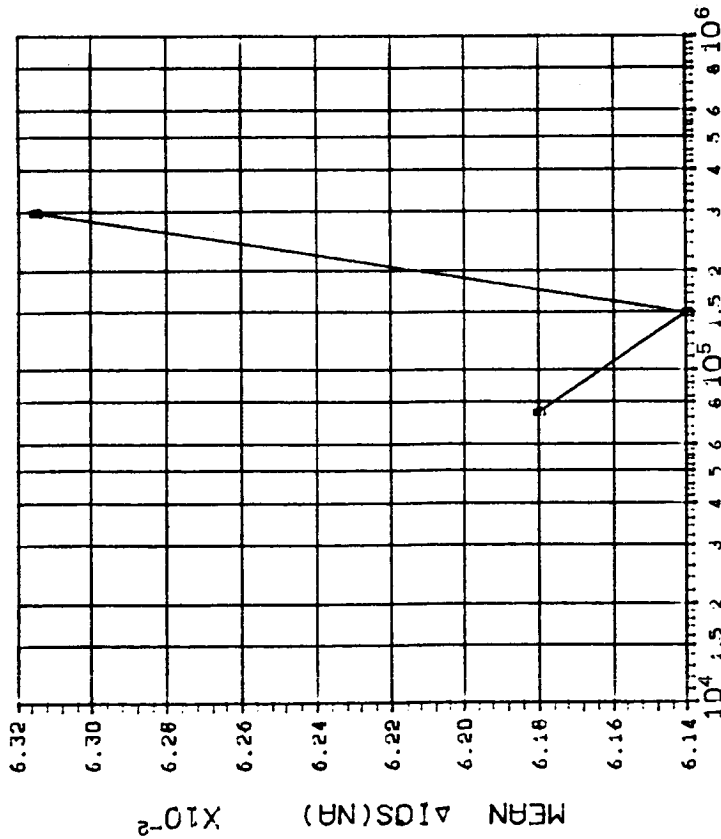
TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
A	600 1000 2000
	.4464 .6437 1.052

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 12-22-83

REF: JPL LOG 1036-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

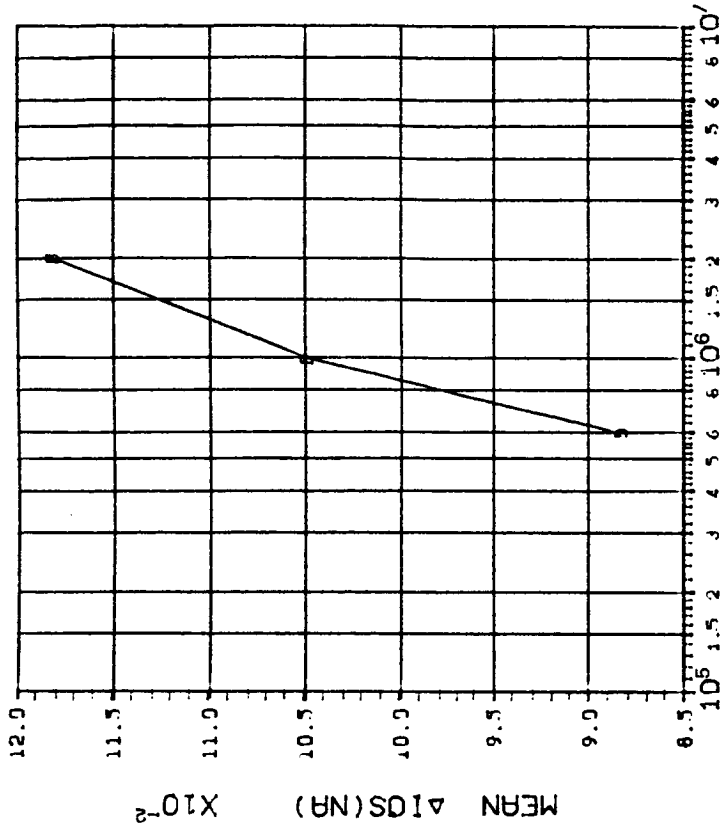
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
5	75
	150
	300
5	.0537 .0530 .0616

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 12-22-83

REF: JPL LOG 1036-2 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

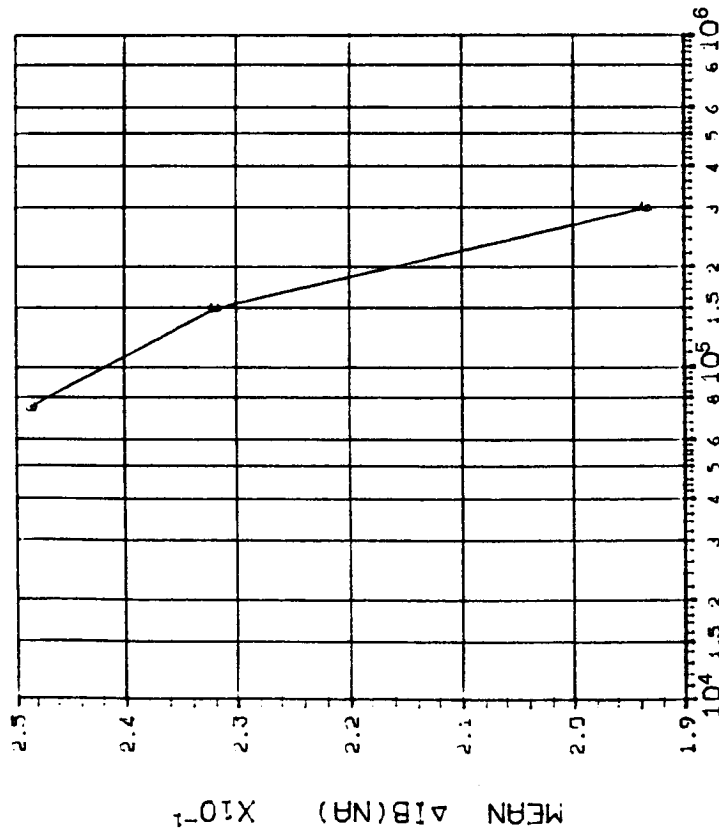
(2)ΔIOS(NA): VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
5	600
	1000
	2000
5	.0977 .1330 .1138

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 12-22-83

REF: JPL LOG 1036-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

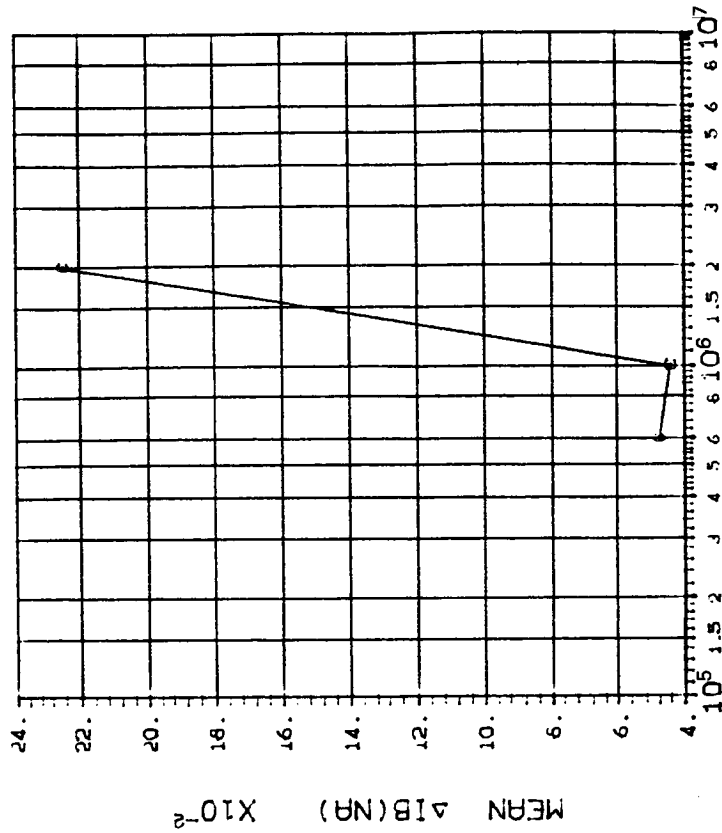
(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	75
	150
	300
C	.1086 .0746 .0747

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 12-22-83

REF: JPL LOG 1036-2 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

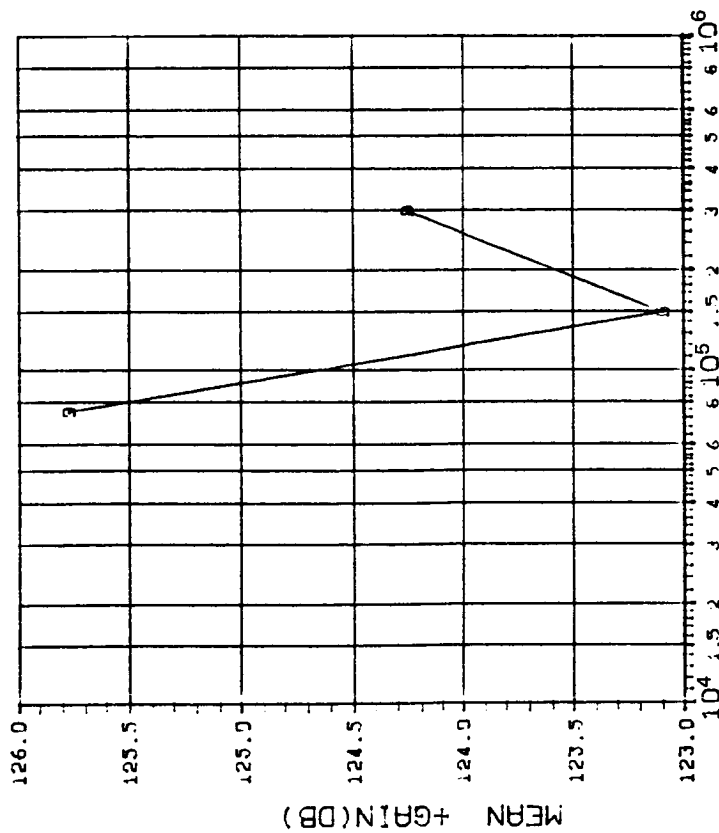
(3) $\Delta IB(NA)$: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	600
	1000
	2000
C	.1368 .2494 .4171

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 12-22-83

REF: JPL LOG 1036-1 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons

(41)+GAIN(DB) VS DOSE

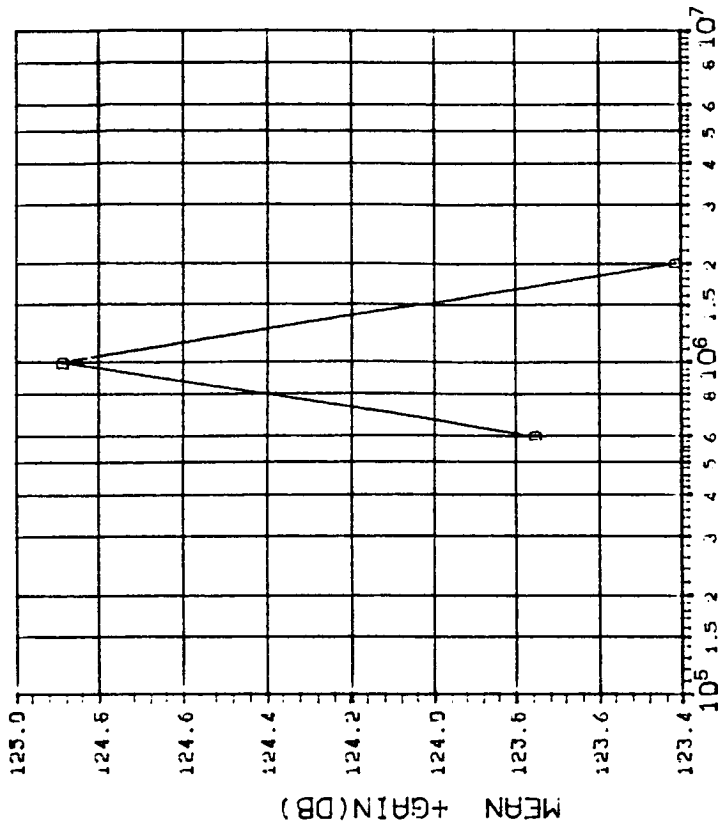
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	5.681 2.306 3.984

INITIAL MEAN VALUE +GAIN(DB) = 1.13X10⁺²

DEVICE TYPE: OPA-111 FET OP AMP

MFG: SUB 5 DEVICES TEST DATE 12-22-83

REF: JPL LOG 1036-2 DATE CODE 8340



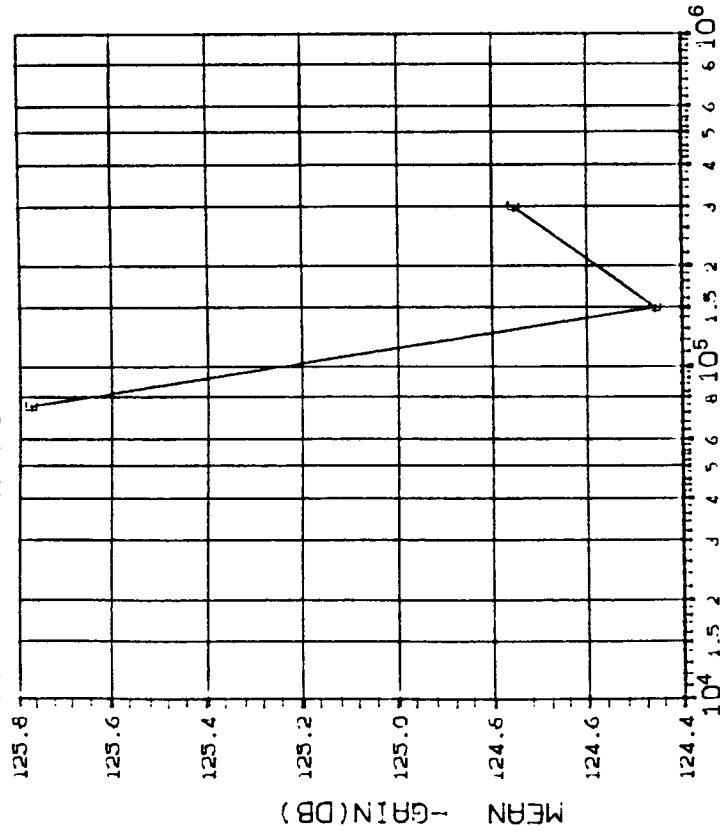
DOSE, rads(Si) 2.5 MeV electrons

(41)+GAIN(DB) VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
D	5.00	4.065 6.144 6.143

INITIAL MEAN VALUE +GAIN(DB) = 1.13X10⁺²

DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 12-22-83
 REF: JPL LOG 1036-1 DATE CODE 8340

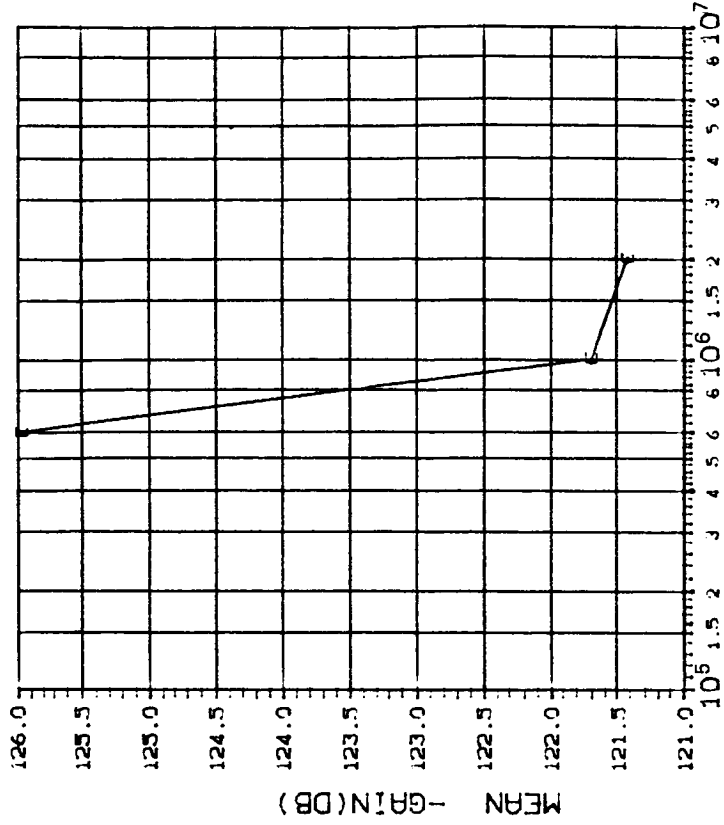


DOSE, rads(Si) 2.5 MeV electrons
 (5)-GAIN(DB) VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	75 150 300
		1.455 2.617 3.772

INITIAL MEAN VALUE -GAIN(DB) = $1.14 \times 10^{+2}$

DEVICE TYPE: OPA-111 FET OP AMP
 MFG: SUB 5 DEVICES TEST DATE 12-22-83
 REF: JPL LOG 1036-2 DATE CODE 8340



DOSE, rads(Si) 2.5 MeV electrons
 (5)-GAIN(DB) VS DOSE

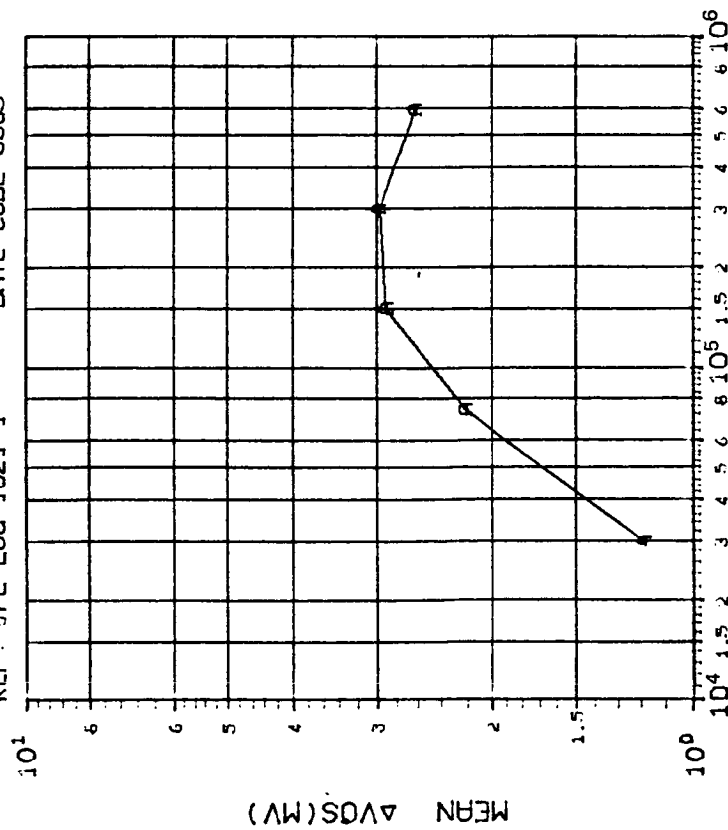
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	I _L (mA)	DOSE, kilorads(Si)
E	5.00	600 1000 2000
		6.079 4.699 5.315

INITIAL MEAN VALUE -GAIN(DB) = $1.14 \times 10^{+2}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PM1 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 10211-1 DATE CODE 8305



MEAN ΔVOS(MV)

DOSE, rads(Si) 2.5 MeV electrons

(1)ΔVOS (V0=0V) IN MV: VS DOSE

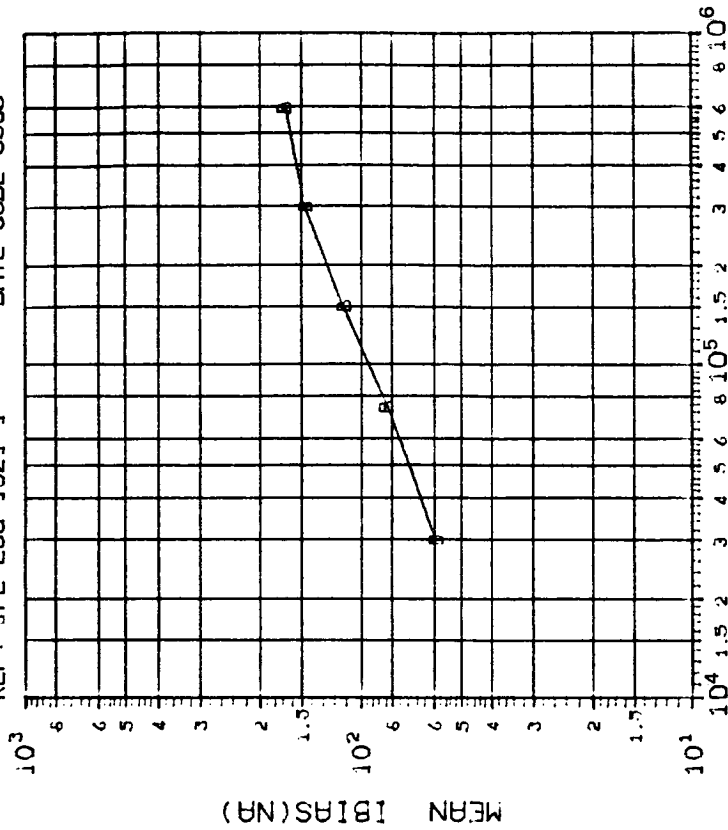
TABLE OF NORMAL STANDARD DEVIATIONS				
CURVE	DOSE, kilorads(Si)			
	30	75	150	300
A	1.980	1.999	1.984	1.616
				1.687

INITIAL MEAN VALUE VOS(MV) = 3.69X10⁻¹

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PM1 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 10211-1 DATE CODE 8305



MEAN IBIAS(NA)

DOSE, rads(Si) 2.5 MeV electrons

(2)IBIAS(V0=0V) IN NA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS				
CURVE	DOSE, kilorads(Si)			
	30	75	150	300
B	4.334	7.524	12.50	26.07
				32.29

INITIAL MEAN VALUE IBIAS(NA) = 4.02X10⁻¹

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMJ 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 1021-1 DATE CODE 8305

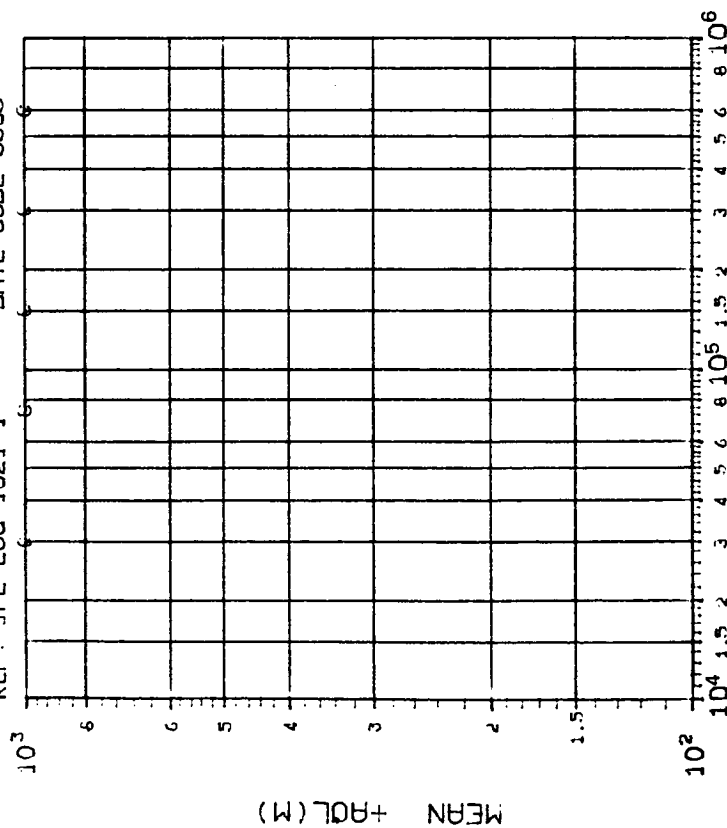


TABLE OF NORMAL STANDARD DEVIATIONS				
CURVE	DOSE, kilorads(Si)			
	30	75	150	300
C	.0447	.0637	.0694	.0995

INITIAL MEAN VALUE +AOL (M) = ****X10⁺²

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMJ 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 1021-1 DATE CODE 8305

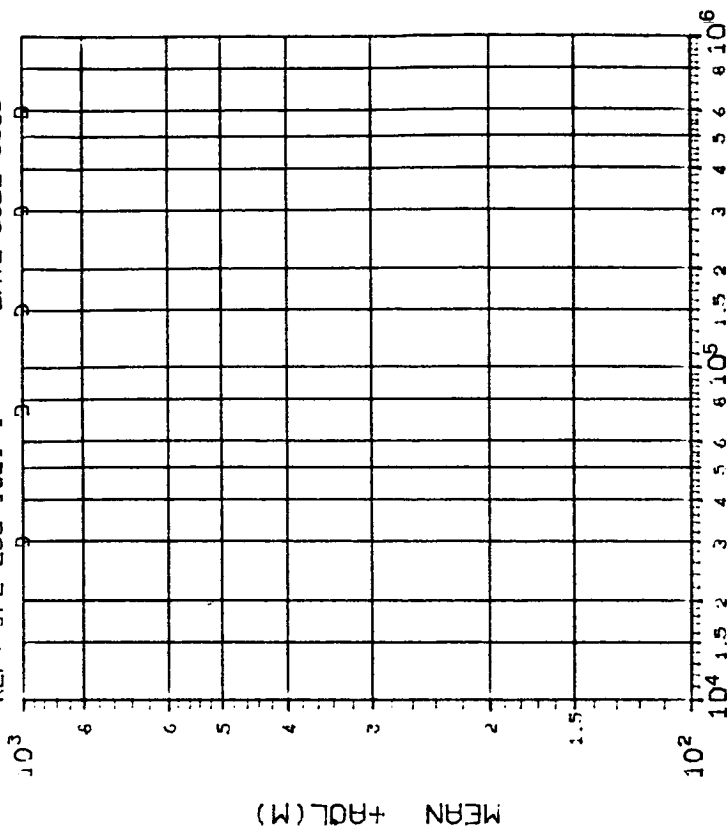


TABLE OF NORMAL STANDARD DEVIATIONS				
CURVE	DOSE, kilorads(Si)			
	30	75	150	300
D	.0707	.0894	.1225	.1095

INITIAL MEAN VALUE +AOL (M) = ****X10⁺²

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
MFG: PMJ 5 DEVICES TEST DATE 11-29-83
REF: JPL LOG 1021-1 DATE CODE 8305

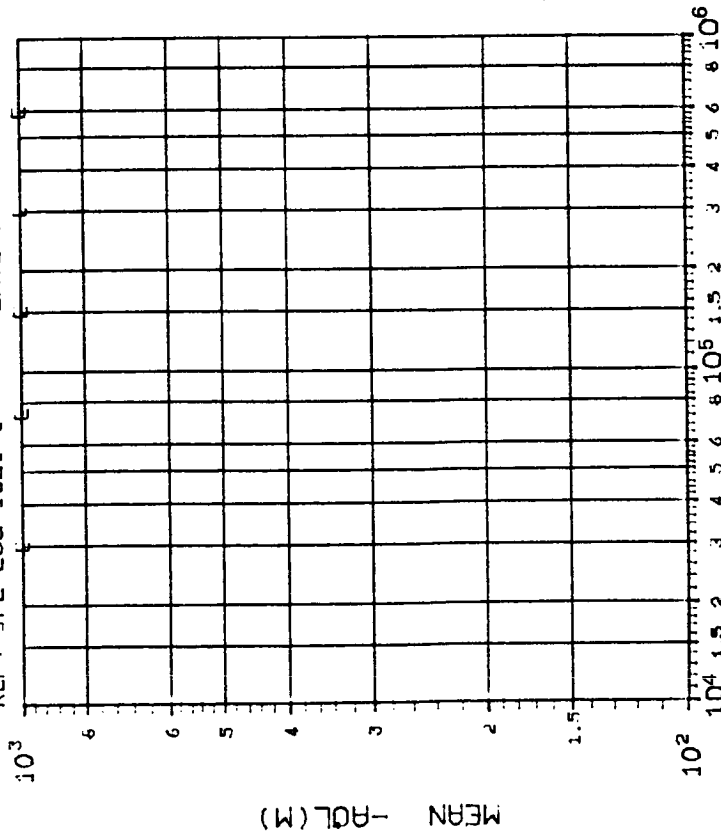


TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
E	30	75
	150	300
	600	
	.0694	.0637

INITIAL MEAN VALUE -AOL (M) = $**** \times 10^{+2}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
MFG: PMJ 5 DEVICES TEST DATE 11-29-83
REF: JPL LOG 1021-1 DATE CODE 8305

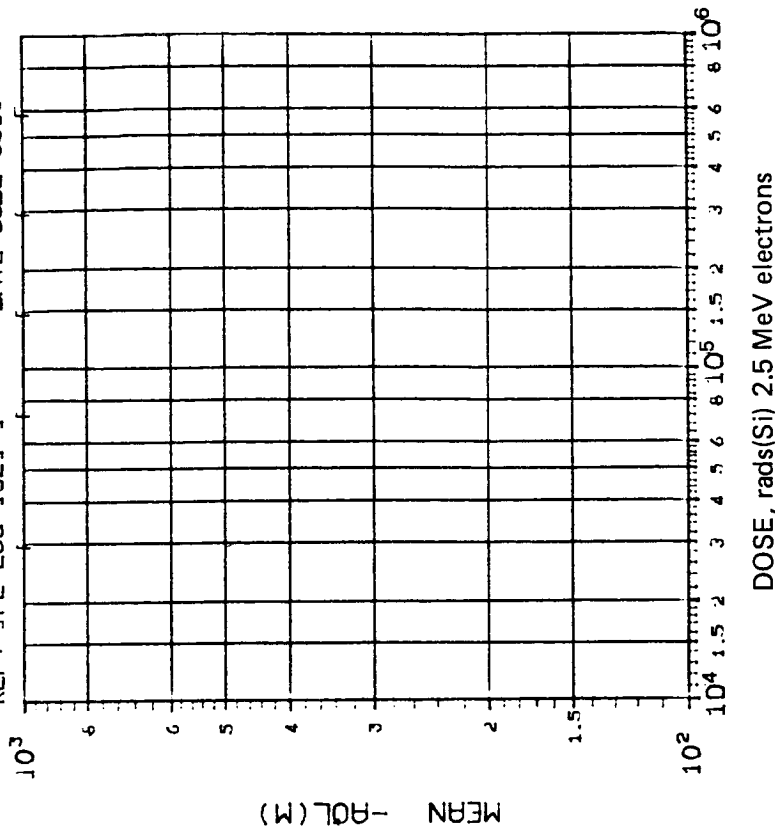


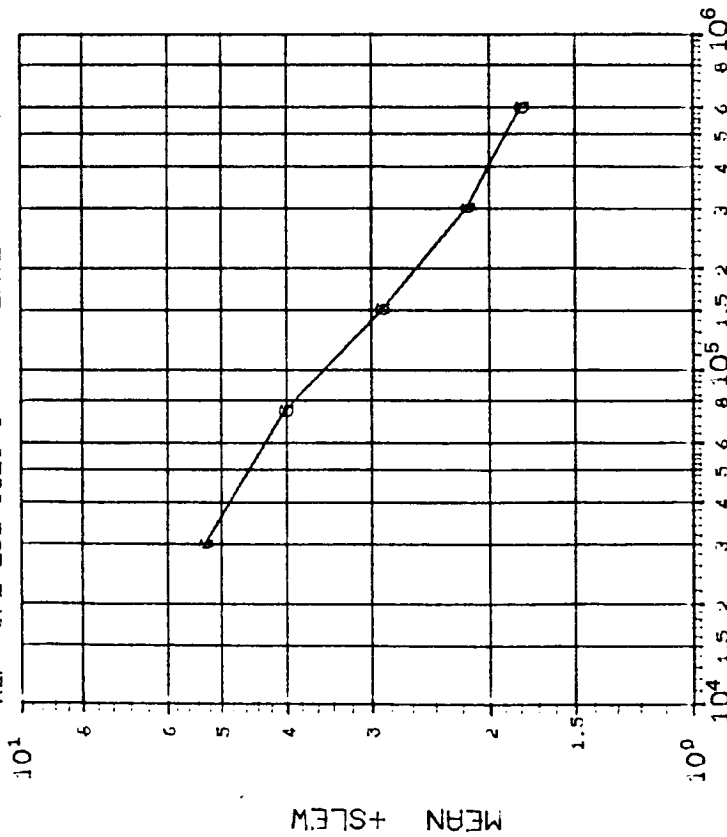
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
F	30	75
	150	300
	600	
	.0694	.0637

INITIAL MEAN VALUE -AOL (M) = $**** \times 10^{+2}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMJ 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 1021-1 DATE CODE 8305



DOSE, rads(Si) 2.5 MeV electrons

(7)SLEW (RL=2K) IN V/US: VS DOSE

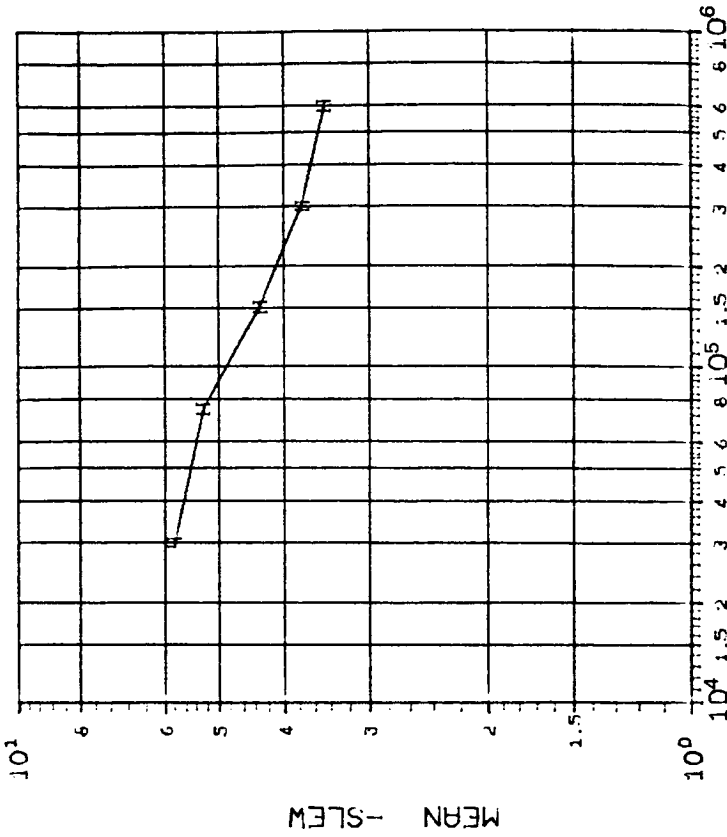
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	30	75
C	.4579	.2107
	150	300
	.3962	.4906
	600	

INITIAL MEAN VALUE +SLEW = 7.04X10¹⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMJ 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 1021-1 DATE CODE 8305



DOSE, rads(Si) 2.5 MeV electrons

(8)SLEW (RL=2K) IN V/US: VS DOSE

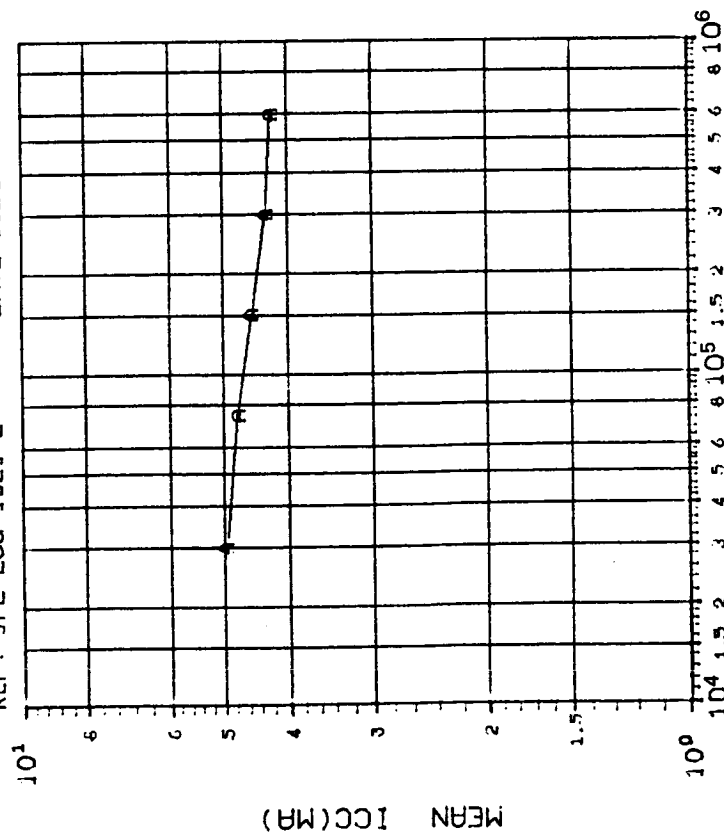
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	30	75
H	.4648	.2647
	150	300
	.3359	.3819
	600	

INITIAL MEAN VALUE -SLEW = 6.98X10¹⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMJ 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 1021-2 DATE CODE 8305



DOSE, rads(Si) 2.5 MeV electrons

(1)ICC (RL=1NF) IN MA: VS DOSE

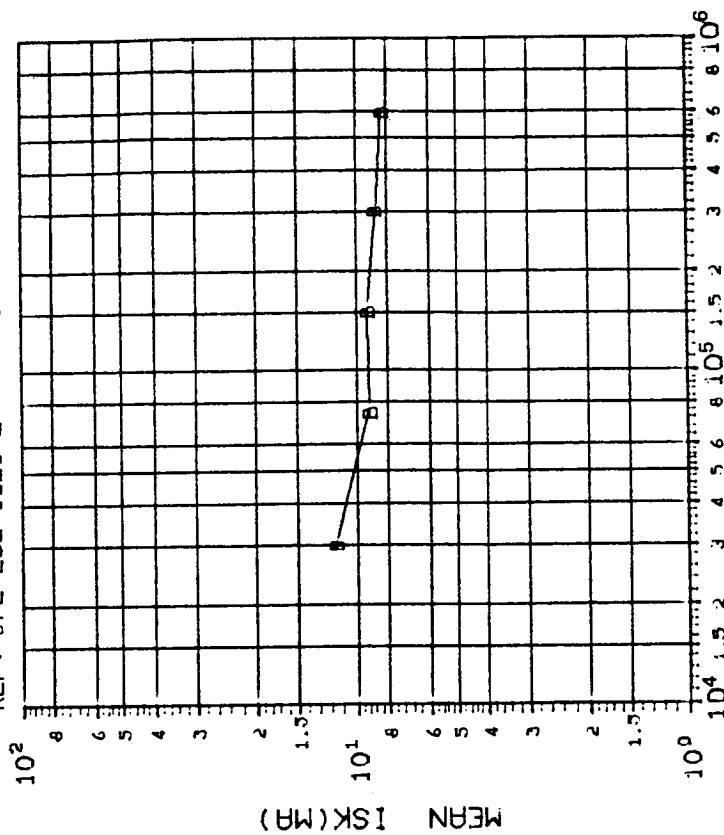
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	30	75 150 300 600
A	.1577	.1503 .1499 .1860 .2223

INITIAL MEAN VALUE ICC(MA) = 5.13X10⁰⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMJ 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 1021-2 DATE CODE 8305



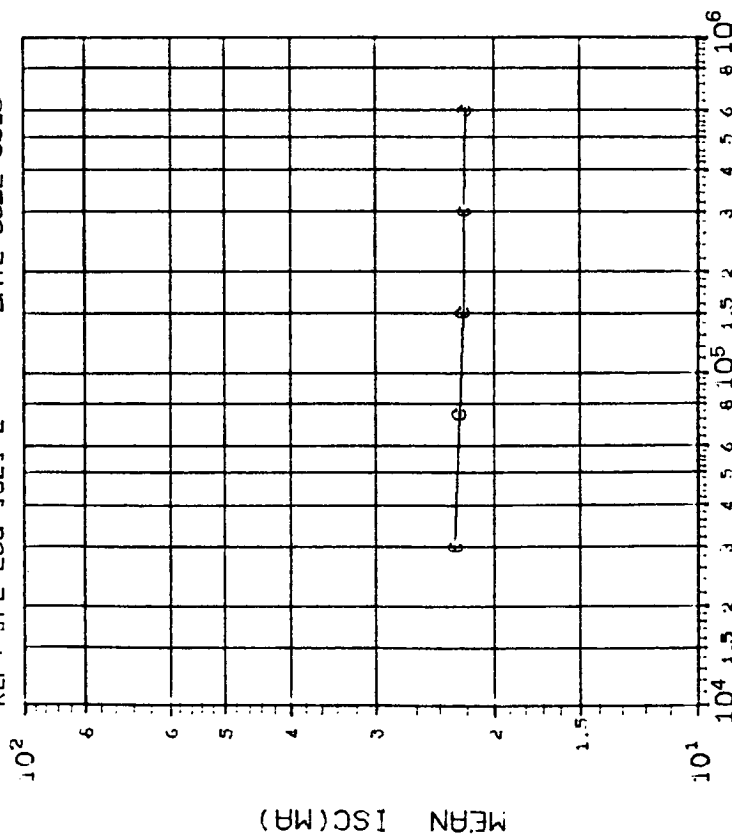
DOSE, rads(Si) 2.5 MeV electrons

(2)ISK (V0=1V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	30	75 150 300 600
B	.6279	2.736 .4487 .4570 .5005

INITIAL MEAN VALUE ISK(MA) = 1.32X10⁰¹

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
MFG: PM1 5 DEVICES TEST DATE 11-29-83
REF: JPL LOG 1021-2 DATE CODE 8305



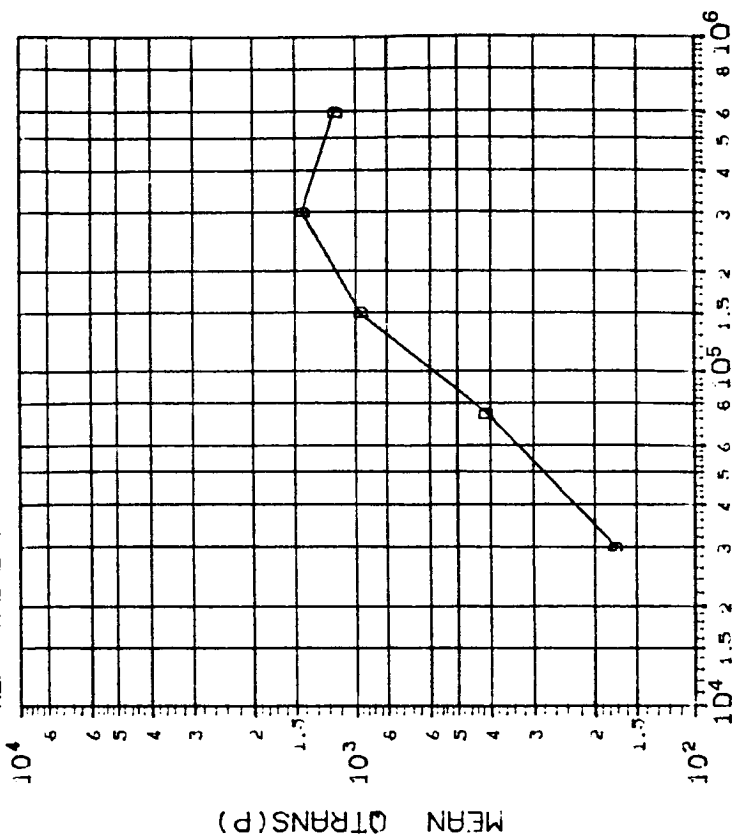
DOSE, rads(Si) 2.5 MeV electrons

(3)ISC (V0=-1V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
C	30 75 150 300 600	
	.7356 .6635 .7198 .6874 .6688	

INITIAL MEAN VALUE ISC(MA) = $2.32 \times 10^{+1}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
MFG: PM1 5 DEVICES TEST DATE 11-29-83
REF: JPL LOG 1021-2 DATE CODE 8305



DOSE, rads(Si) 2.5 MeV electrons

(4)QTRANS(C=5.05NF) IN PC: VS DOSE

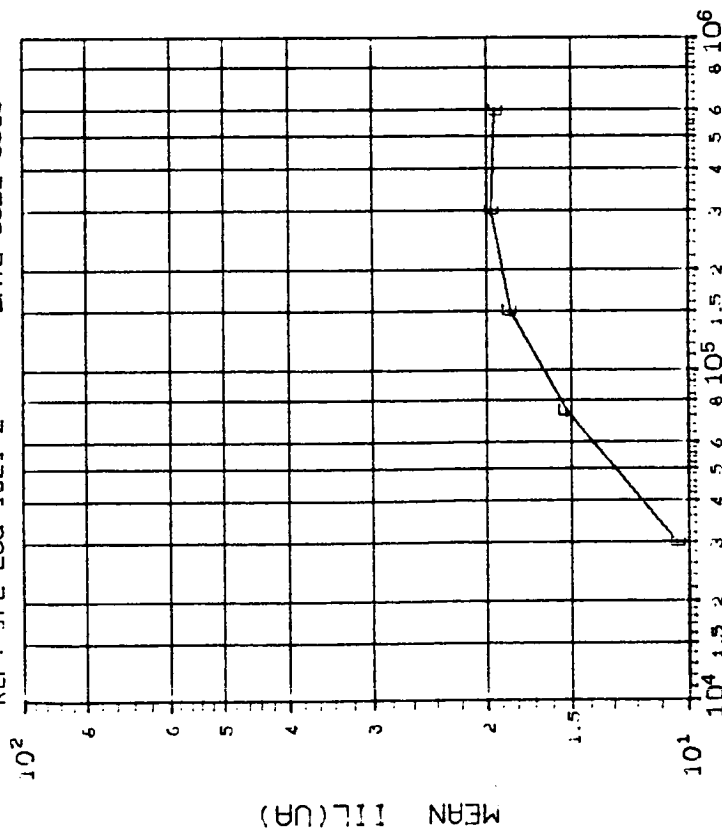
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
D	30 75 150 300 600	
	41.69 264.3 104.6 480.6 373.6	

INITIAL MEAN VALUE QTRANS(P) = $6.59 \times 10^{+1}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PM1 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 1021-2 DATE CODE 8305



MEAN IIL(UA)

DOSE, rads(Si) 2.5 MeV electrons

(5)IIL (VIN=OV) IN UA: VS DOSE

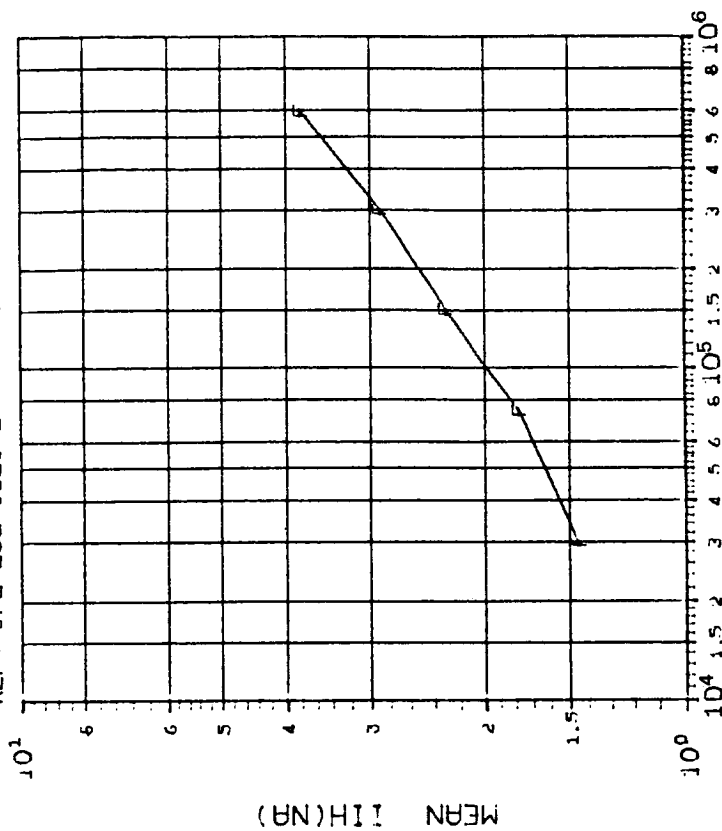
TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	30	75	150
C	.4343	.1073	.9186
	300	600	
	1.749	2.094	

INITIAL MEAN VALUE IIL(UA) = 5.10×10^{10}

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PM1 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 1021-2 DATE CODE 8305



MEAN IIH(NR)

DOSE, rads(Si) 2.5 MeV electrons

(6)IIH (VIN=5V) IN NA: VS DOSE

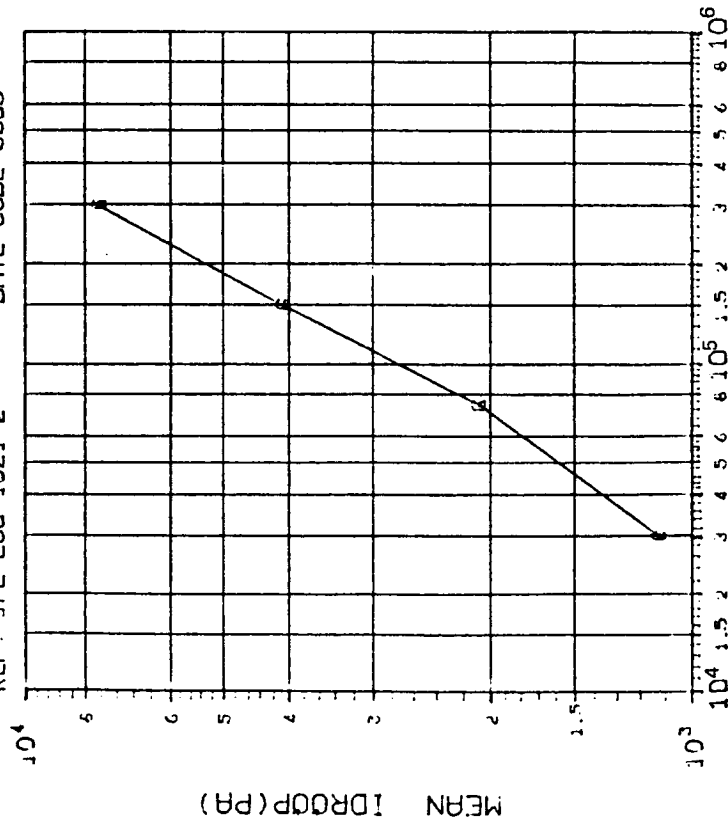
TABLE OF NORMAL STANDARD DEVIATIONS			
CURVE	DOSE, kilorads(Si)		
	30	75	150
F	.0483	.1683	.2256
	300	600	
	.3044	.4563	

INITIAL MEAN VALUE IIH(NA) = 1.26×10^{10}

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMJ 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 1021-2 DATE CODE 6305



DOSE, rads(Si) 2.5 MeV electrons

(7) IDROOP(VIN=5V) IN PA: VS DOSE

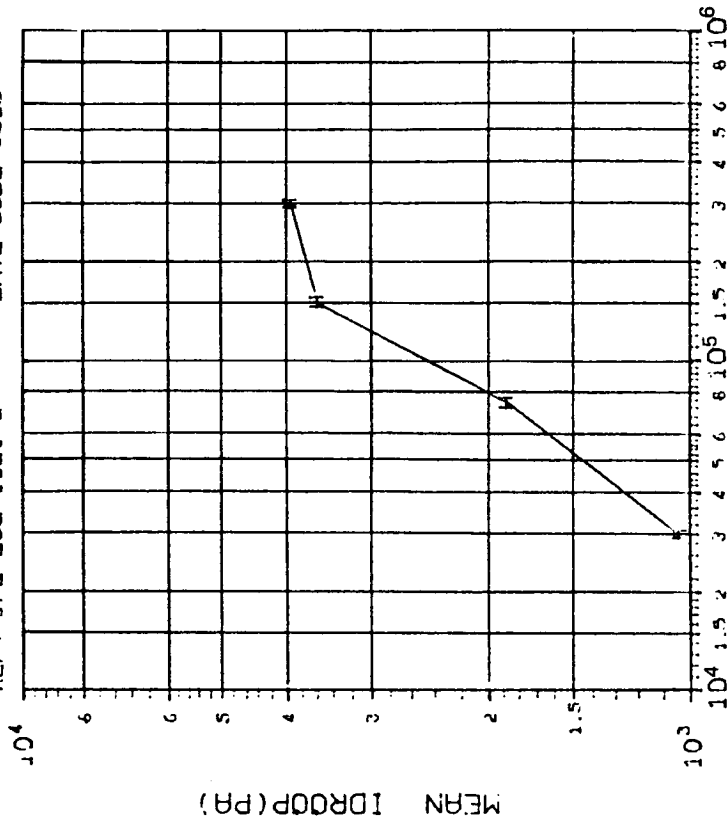
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
C	30
	75
	150
	300
G	600
	1132
	2309
	5385

INITIAL MEAN VALUE IDROOP(PA) = $4.69 \times 10^{+2}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMJ 5 DEVICES TEST DATE 11-29-83

REF: JPL LOG 1021-2 DATE CODE 6305



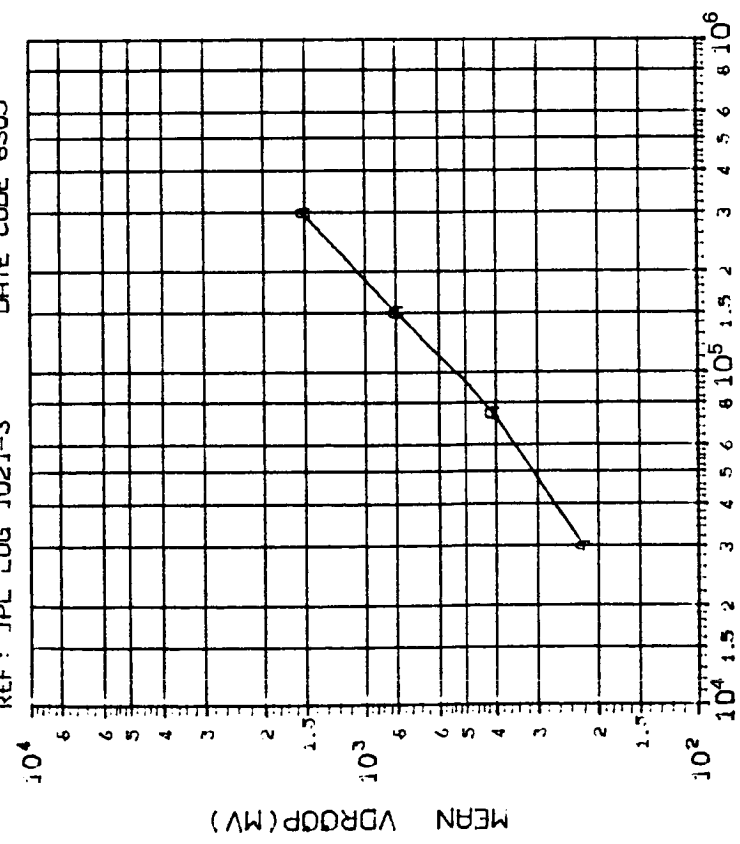
DOSE, rads(Si) 2.5 MeV electrons

(8) IDROOP(VIN=5V) IN PA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	30
	75
	150
	300
I	600
	1194
	2277
	5391

INITIAL MEAN VALUE IDROOP(PA) = $4.46 \times 10^{+2}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-3 DATE CODE 8305



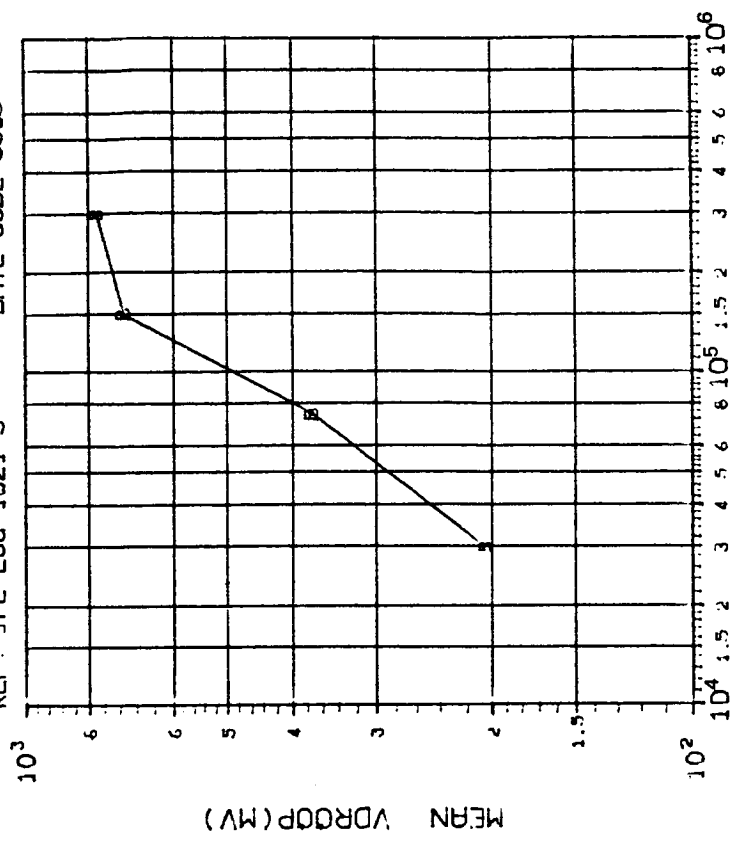
DOSE, rads(Si) 2.5 MeV electrons

(1)VDR00P(VIN=5V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	30	75
A	45.59	106.6
	224.1	637.4

INITIAL MEAN VALUE VDR00P(MV) = $9.29 \times 10^{+1}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-3 DATE CODE 8305



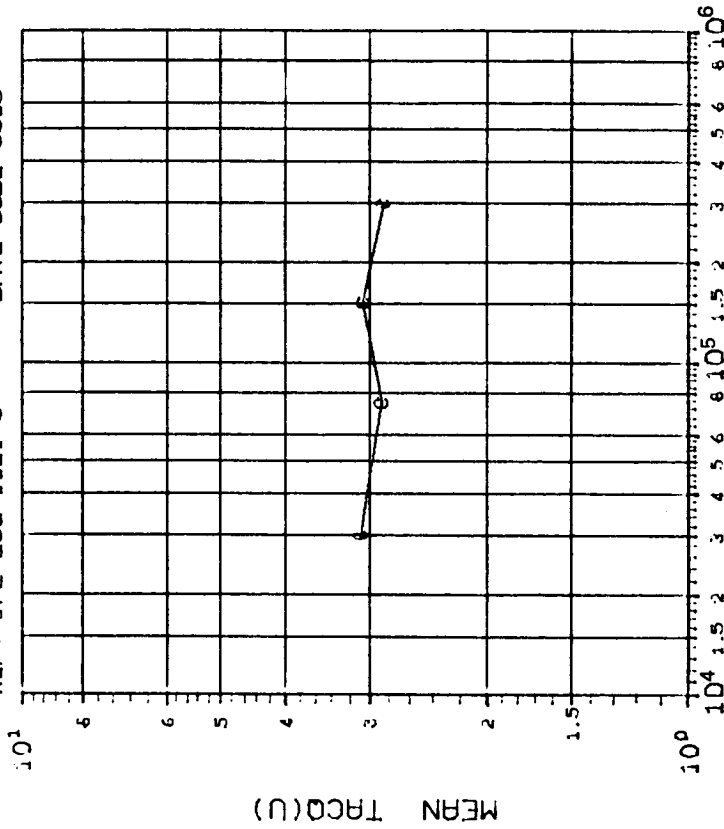
DOSE, rads(Si) 2.5 MeV electrons

(2)VDR00P(VIN=5V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	30	75
B	45.12	106.6
	236.5	182.0

INITIAL MEAN VALUE VDR00P(MV) = $8.62 \times 10^{+1}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 11-29-83
 REF: JPL LOG 1021-3 DATE CODE 6305



DOSE, rads(Si) 2.5 MeV electrons

(3)TACQ (1VALUE) IN US: VS DOSE

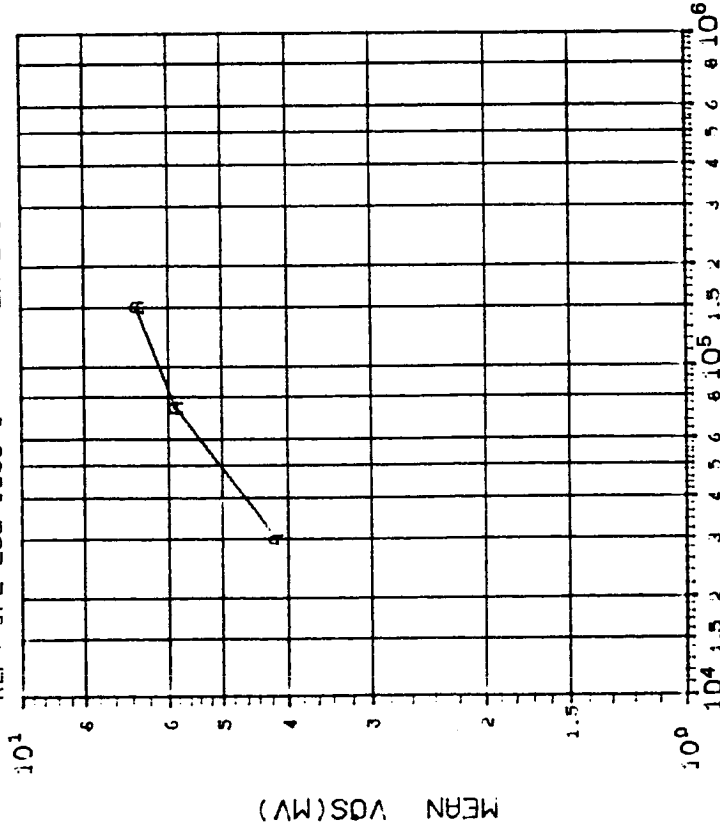
TABLE OF NORMAL STANDARD DEVIATIONS				
CURVE	DOSE, kilorads(Si)			
	30	75	150	300 600
C	.2866	.3428	.9377	1.101 ****

INITIAL MEAN VALUE TACQ(U) = 2.31×10^0

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMJ 5 DEVICES TEST DATE 04-04-84

REF: JPL LOG 1060-1 DATE CODE 8410



DOSE, rads(Si) 2.5 MeV electrons

(1)VDS (V0=0V) IN MV: VS DOSE

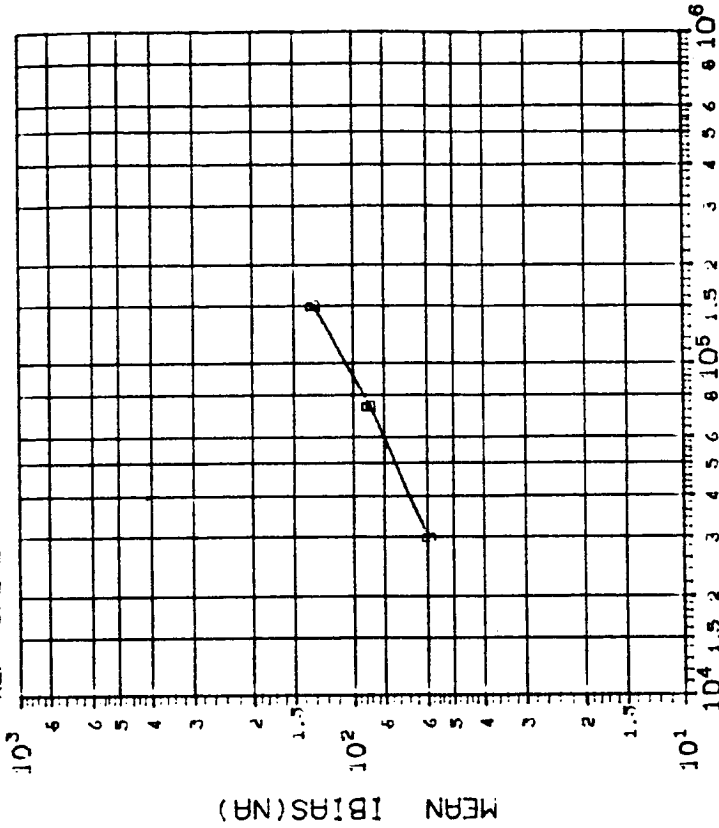
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	30 75 150
	1.600 2.017 2.130

INITIAL MEAN VALUE VDS(MV) = 1.31×10^{90}

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMJ 5 DEVICES TEST DATE 04-04-84

REF: JPL LOG 1060-1 DATE CODE 8410



DOSE, rads(Si) 2.5 MeV electrons

(2)IBIAS(V0=0V) IN NR: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	30 75 150
	1.191 9.167 14.56

INITIAL MEAN VALUE IBIAS(NR) = 3.17×10^{91}

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PM1 5 DEVICES TEST DATE 04-04-84

REF: JPL LOG 1060-1 DATE CODE 8410

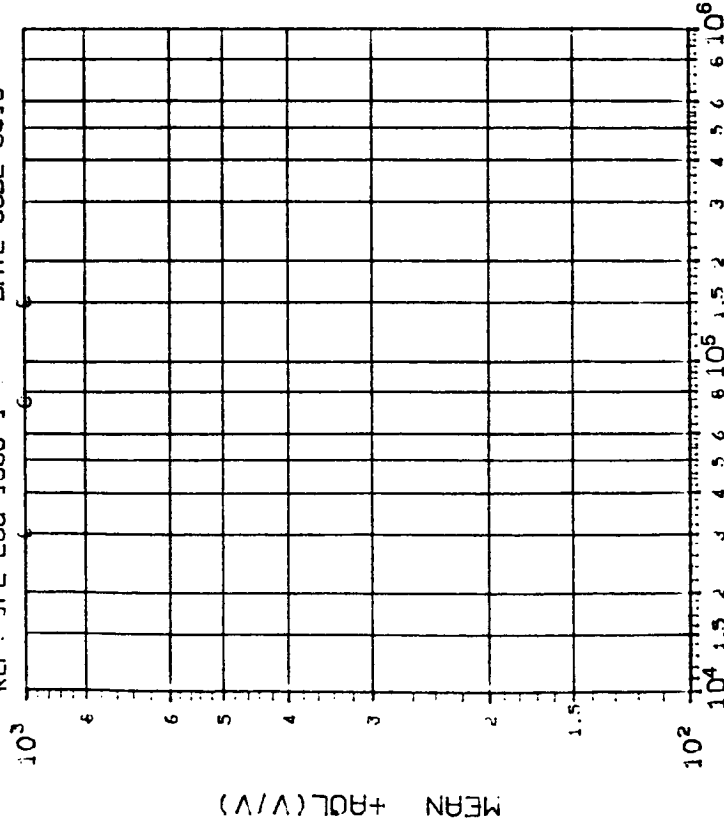


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	30 75 150
C	.0546 .1000 .0894

INITIAL MEAN VALUE +AOL (V/V) = ****X10⁺²

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PM1 5 DEVICES TEST DATE 04-04-84

REF: JPL LOG 1060-1 DATE CODE 8410

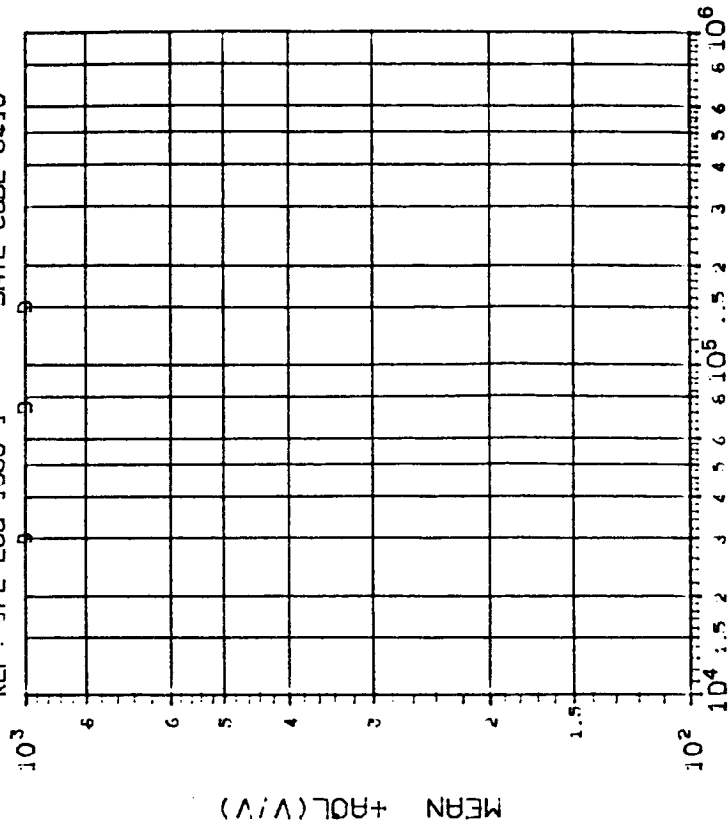
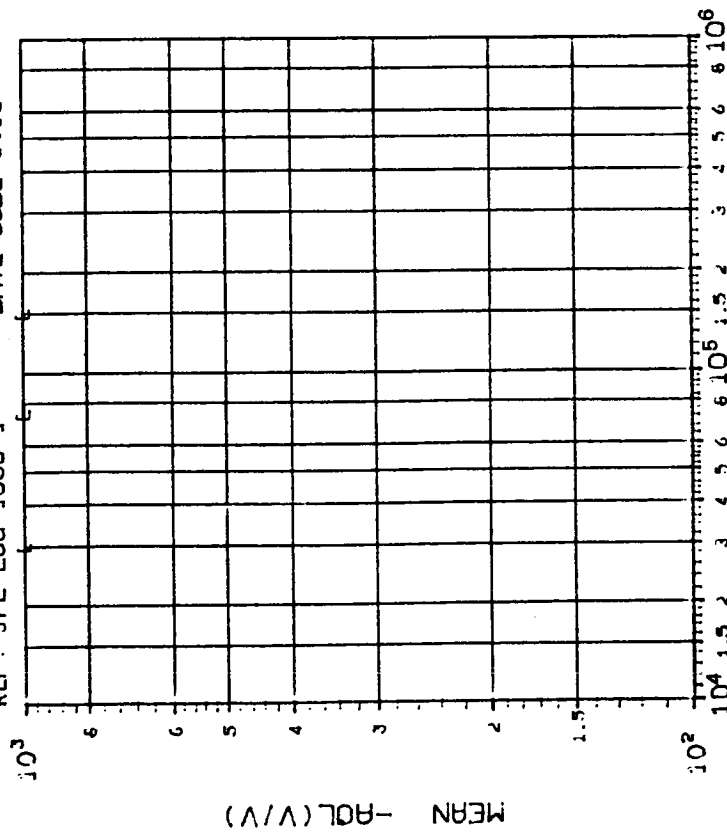


TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
	30 75 150
D	.0546 .1000 .1095

INITIAL MEAN VALUE +AOL (V/V) = ****X10⁺²

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-1 DATE CODE 8410



INITIAL MEAN VALUE -AOL(V/V) = $****X10^{12}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-1 DATE CODE 8410

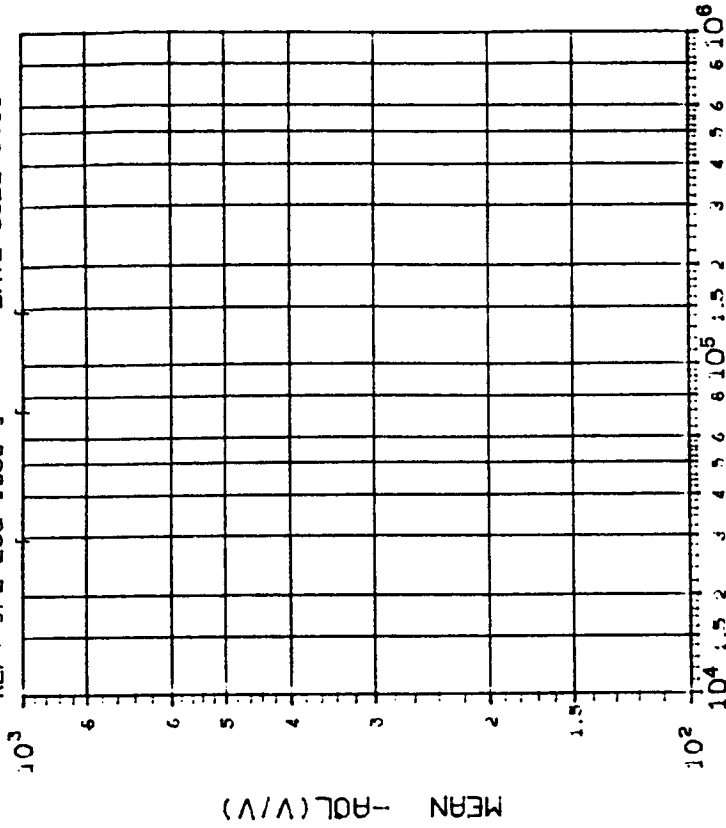
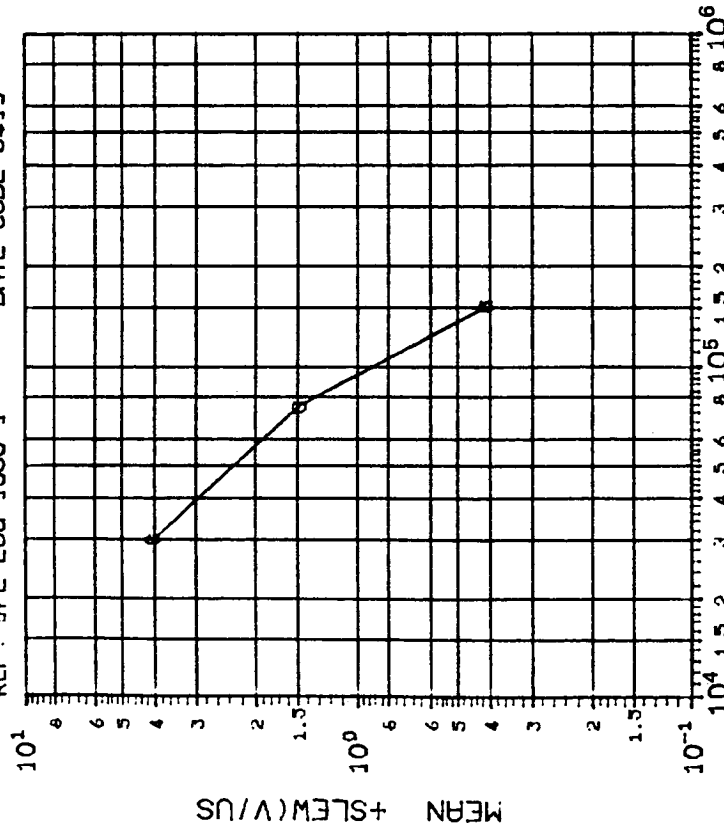


TABLE OF NORMAL STANDARD DEVIATIONS

CURVE	DOSE, kilorads(Si)
	30 75 150
σ	.0548 .0447 .0548

INITIAL MEAN VALUE -AOL(V/V) = $****X10^{12}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-1 DATE CODE 8410

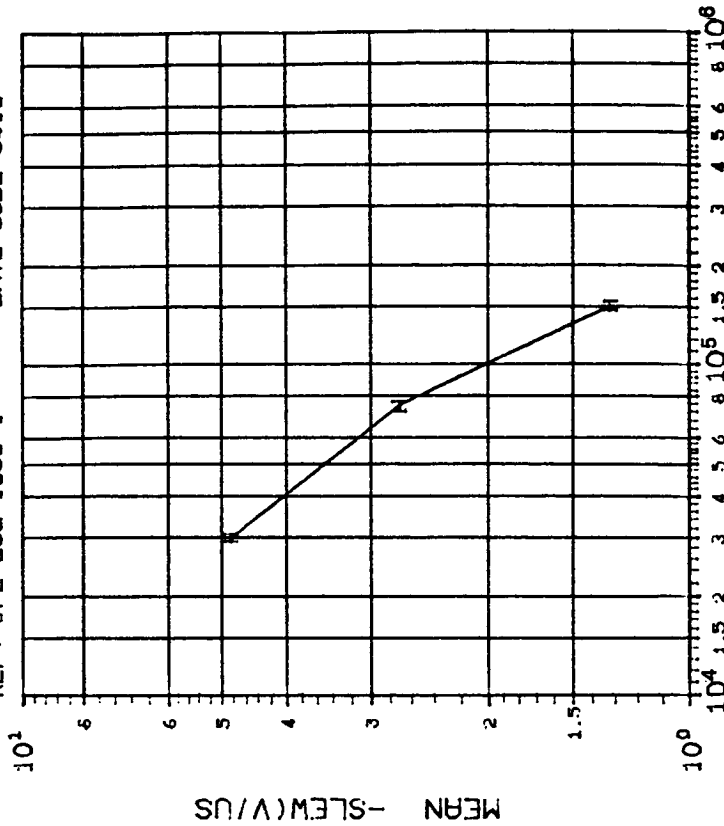


(7)SLEW (RL=2K) IN V/US: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	30	75 150
G	.1457	.2544 .1389

INITIAL MEAN VALUE +SLEW(V/US) = 7.52X10⁺⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PM1 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-1 DATE CODE 8410



(8)SLEW (RL=2K) IN V/US: VS DOSE

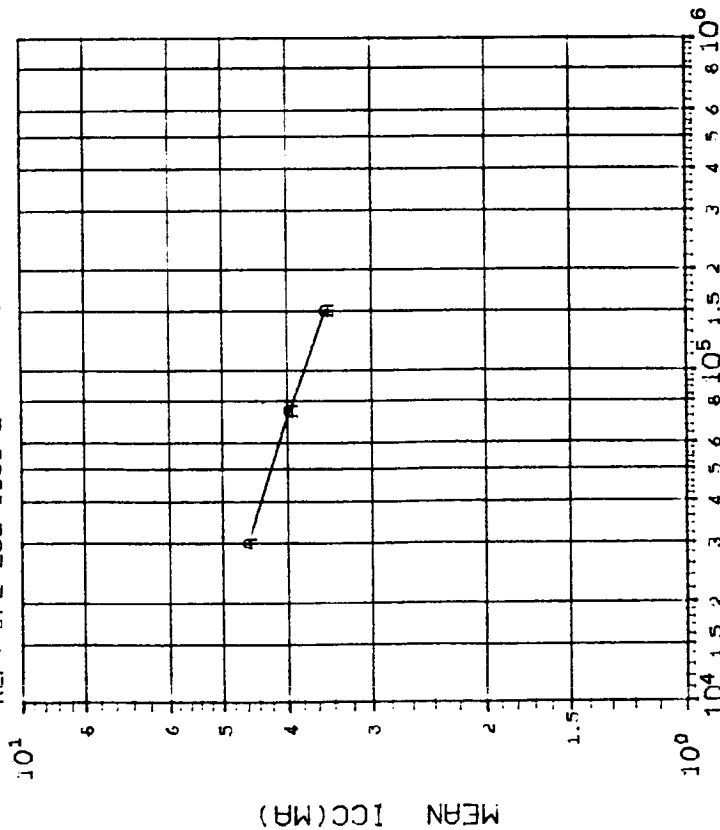
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	30	75 150
H	.1873	.3183 .2519

INITIAL MEAN VALUE -SLEW(V/US) = 6.72X10⁺⁰

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PM1 5 DEVICES TEST DATE 04-04-84

REF: JPL LOG 1060-2 DATE CODE 8410

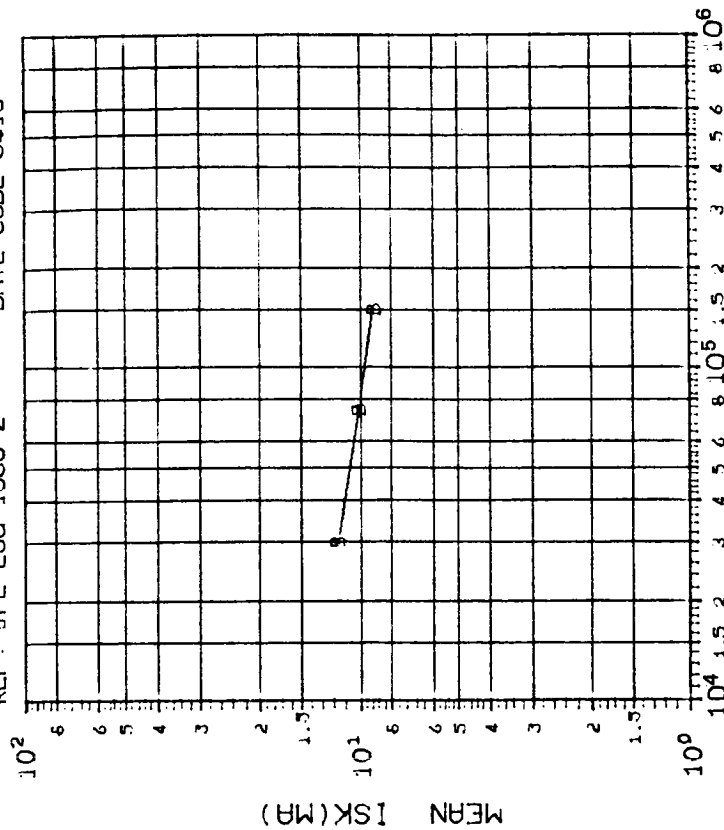


DOSE, rads(Si) 2.5 MeV electrons

(1) ICC (AL=1NF) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
A	30
	75
	150
	.0776 .1223 .1351

INITIAL MEAN VALUE ICC(MA) = 4.93×10^{00}



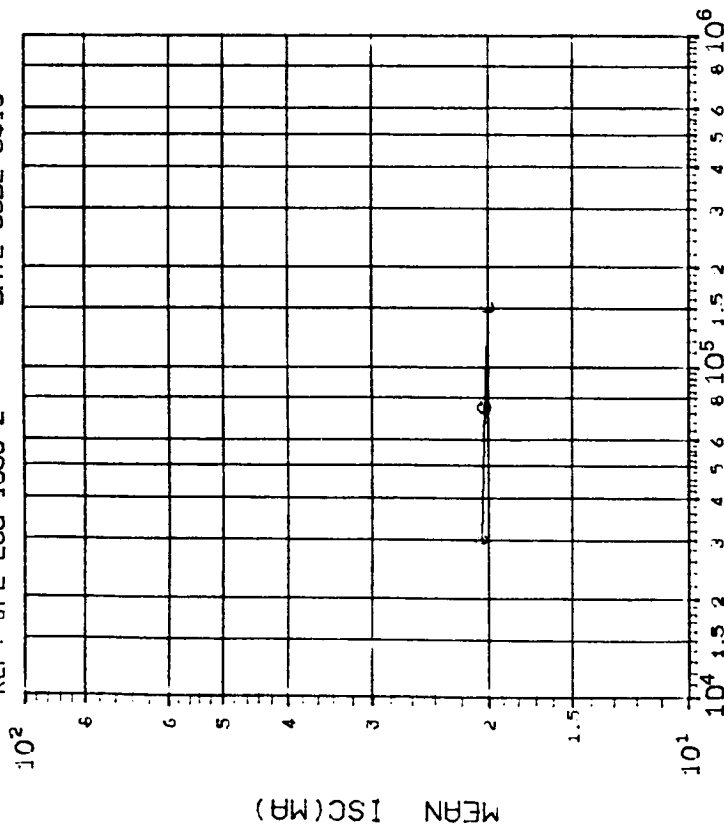
DOSE, rads(Si) 2.5 MeV electrons

(2) ISK (V0=1V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	30
	75
	150
	.4528 .4247 .4727

INITIAL MEAN VALUE ISK(MA) = $1.40 \times 10^{+1}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
MFG: PMI 5 DEVICES TEST DATE 04-04-84
REF: JPL LOG 1060-2 DATE CODE 8410



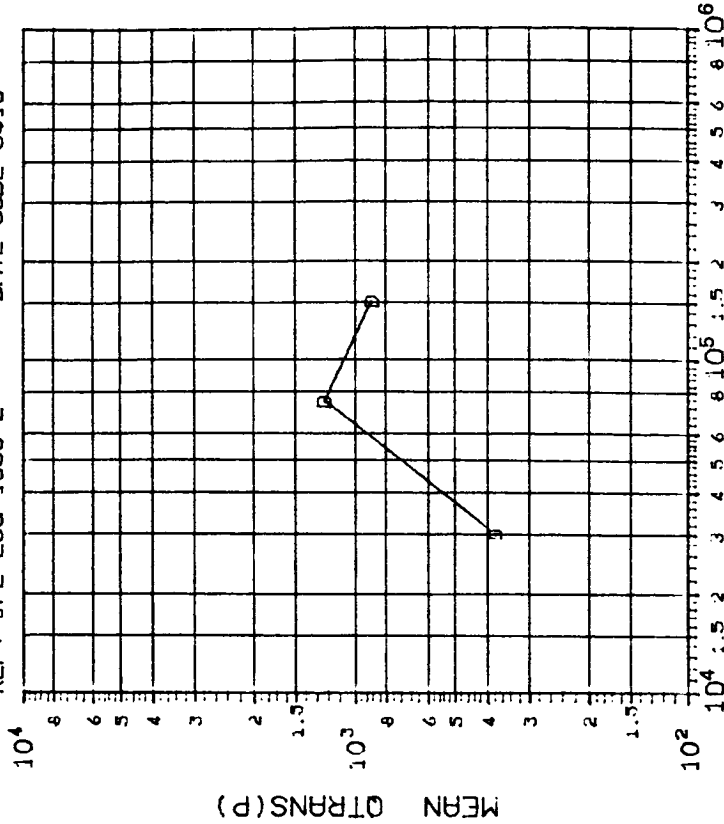
DOSE, rads(Si) 2.5 MeV electrons

(3)ISC (V0=-1V) IN MA: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	30	75 150
C	.2066	.2075 .2017

INITIAL MEAN VALUE ISC(MA) = 2.11×10^{-1}

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
MFG: PMI 5 DEVICES TEST DATE 04-04-84
REF: JPL LOG 1060-2 DATE CODE 8410



DOSE, rads(Si) 2.5 MeV electrons

(4)QTRANS(C=5.05NF) IN PC: VS DOSE

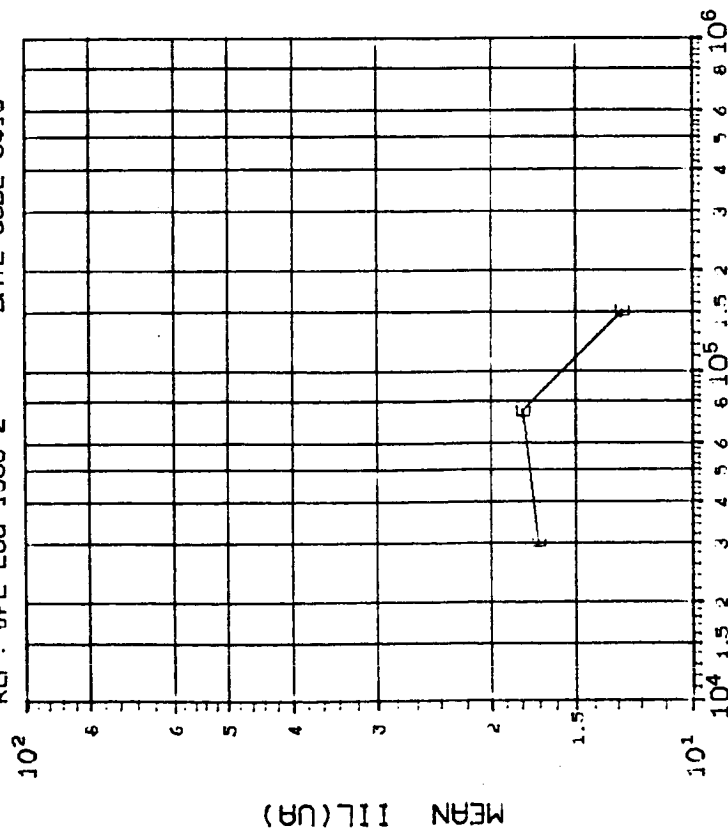
TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	30	75 150
D	44.91	122.4 64.62

INITIAL MEAN VALUE QTRANS(P) = 1.09×10^{-2}

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PM1 5 DEVICES TEST DATE 04-04-84

REF: JPL LOG 1060-2 DATE CODE 8410



DOSE, rads(Si) 2.5 MeV electrons

(5)111L (VIN=OV) IN UA: VS DOSE

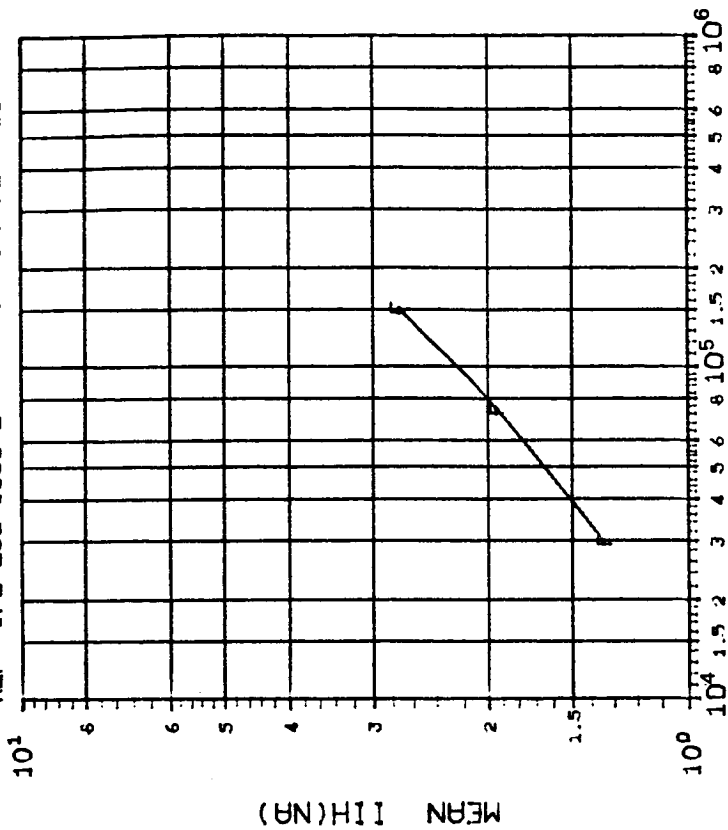
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
E	30
	75
	150
.6261 1.114 1.165	

INITIAL MEAN VALUE IIL(UA) = $5.75 \times 10^{+0}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PM1 5 DEVICES TEST DATE 04-04-84

REF: JPL LOG 1060-2 DATE CODE 8410



DOSE, rads(Si) 2.5 MeV electrons

(6)111H (VIN=5V) IN NA: VS DOSE

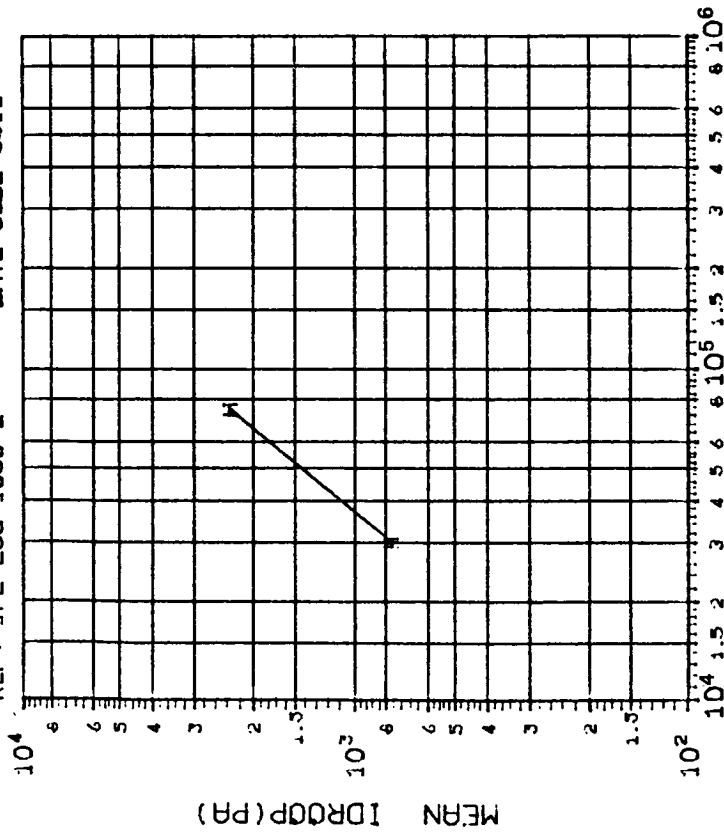
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
F	30
	75
	150
.0192 .0750 .1228	

INITIAL MEAN VALUE I1H(NA) = $1.08 \times 10^{+0}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMJ 5 DEVICES TEST DATE 04-04-84

REF: JPL LOG 1060-2 DATE CODE 8410



(8) IDROOP(VINE-5V) IN PA: VS DOSE

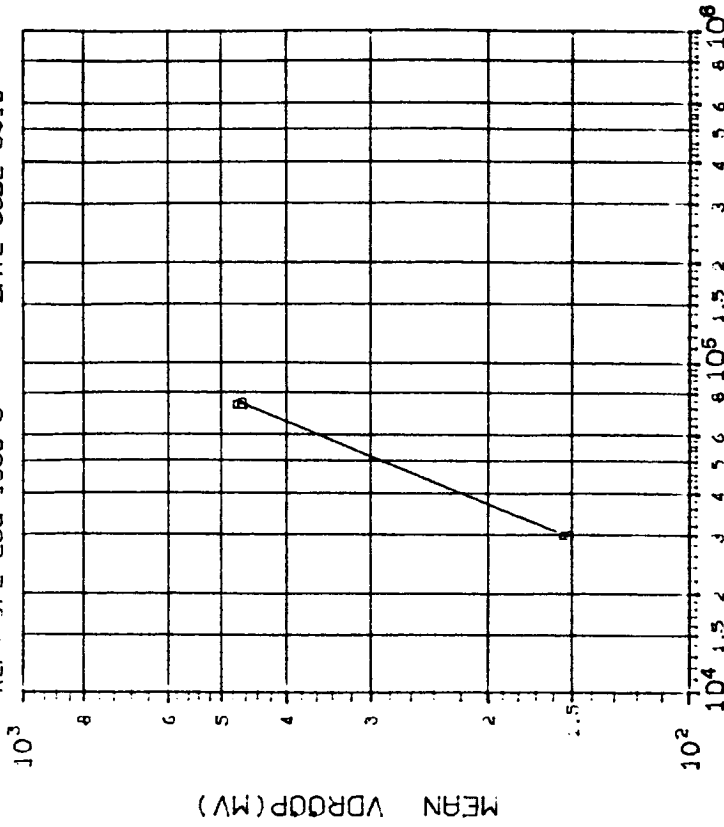
TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
H	30
	75
	150
74.07 233.9 ***	

INITIAL MEAN VALUE IDROOP(PA) = $2.32 \times 10^{+2}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD

MFG: PMJ 5 DEVICES TEST DATE 04-04-84

REF: JPL LOG 1060-3 DATE CODE 8410

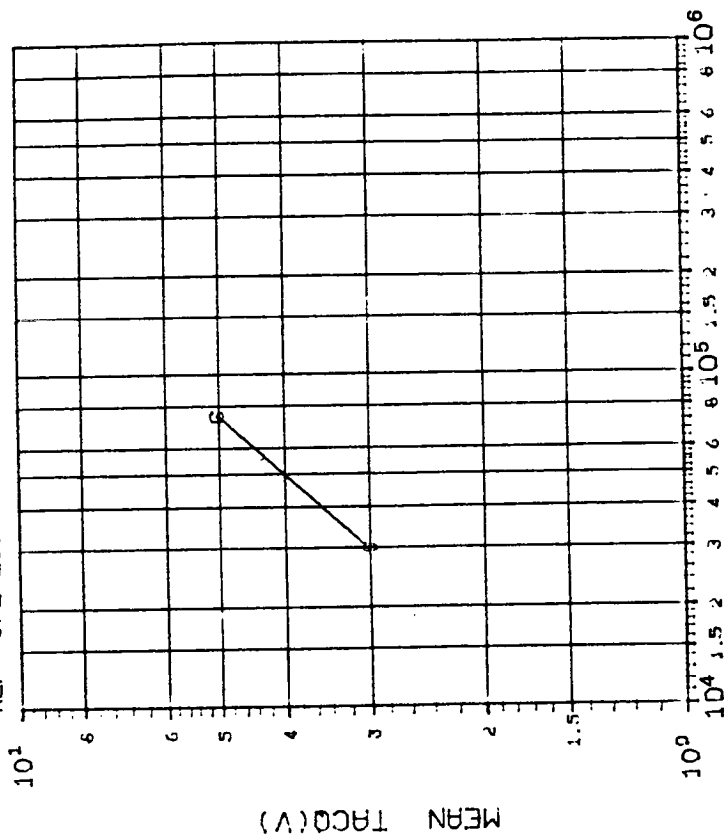


(2) VDR00P(VINE-5V) IN MV: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS	
CURVE	DOSE, kilorads(Si)
B	30
	75
	150
14.69 46.34 ***	

INITIAL MEAN VALUE VDR00P(MV) = $4.60 \times 10^{+1}$

DEVICE TYPE: SMP-11 SAMPLE AND HOLD
 MFG: PMJ 5 DEVICES TEST DATE 04-04-84
 REF: JPL LOG 1060-3 DATE CODE 8410



DOSE, rads(Si) 2.5 MeV electrons
 (3)TACQ (1VALUE) IN US: VS DOSE

TABLE OF NORMAL STANDARD DEVIATIONS		
CURVE	DOSE, kilorads(Si)	
	30	75 150
C	.2790	.2189 ****

INITIAL MEAN VALUE TACQ(V) = 2.26×10^{12}

APPENDIX A

VENDOR IDENTIFICATION CODE LIST

VENDOR IDENTIFICATION CODE LIST

ADI	Analog Devices, Inc.
ALP	Alpha Industries, Semiconductor Division
AMD	Advanced Microdevices Corporation
AMP	Amptek, Inc.
BUB	Burr-Brown
FSC	Fairchild Semiconductor
HAR	Harris Corporation, Semiconductor Division
HUG	Hughes Aircraft Co., Solid State Prod.
LTC	Linear Technology, Inc.
MNC	Micro Networks Corporation
MOT	Motorola, Inc., Semiconductor Products Division
MPS	Micro Power Systems, Inc.
MTL	Mitel Semiconductor
NSC	National Semiconductor Corporation
PMI	Precision Monolithics, Inc.
RAY	Ratheon Co., Semiconductor Division
RCA	RCA Corporation, Solid State Division
SIL	Siliconix Devices, Inc.
SPI	Semi Processes, Inc.
SSS	Solid State Scientific
STX	Supertex, Inc.

APPENDIX B

INTEGRATED CIRCUIT ELECTRICAL PARAMETER
SYMBOLS AND ABBREVIATIONS

INTEGRATED CIRCUIT ELECTRICAL PARAMETER
SYMBOLS AND ABBREVIATIONS

AOL ERR.	Gain error
AOL OFF	Offset gain
+AV	Positive voltage gain
-AV	Negative voltage gain
+A _{VOL}	Positive voltage gain under load
-A _{VOL}	Negative voltage gain under load
DVDT	Change in voltage vs. time
F _{MAX}	Maximum frequency
+FSACC	Positive full-scale accuracy
-FSACC	Negative full-scale accuracy
I _{AMP-IN}	Amplifier input current
I _B	Input bias current
I _{CC}	Power supply current
I _{CC-BLK}	Power supply current, blank mode
I _{CC-CONV}	Power supply current, convert mode
I _{CC(H/L)}	Power supply current, high/low level
I _{CHG(+,-)}	Charging current, + and -
I _{D(OFF)}	Drain current, off
I _{DD}	Drain supply current
+I _{DFT}	Positive drift current
-I _{DFT}	Negative drift current
I _{DIS(ON)}	Drain and source current, on
I _{DN}	Output drive current, negative
I _{DP}	Output drive current, positive
I _{DSS}	Drain source current
I _{EE}	Emitter power supply current
I _{EE-BLK}	Emitter power supply current, blank mode
I _{EE-CONV}	Emitter power supply current, convert mode
I _{FS}	Full-scale current
I _{I(H/L)}	Input current, high/low level
I _{IH STR}	Start-convert current
I _{LEAKAGE}	Leakage current

INTEGRATED CIRCUIT ELECTRICAL PARAMETER
SYMBOLS AND ABBREVIATIONS (Continued)

I_{LL}	Input current, low level
I_{LOGIC}	Logic power supply current
$I_{O(H/L)}$	Output current, high/low level
I_{OS}	Offset current
$I_{OZ(H/L)}$	Tri-state output leakage current, high/low level
I_{REF}	Reference current
$I_{S(OFF)}$	Source current, off
I_{SC}	Output source current
I_{SK}	Output sink current
I_{SS}	Source supply current
I_{SYM}	Current symmetry
I_{ZERO}	Zero-scale current
LSB	Least significant bit
NONLIN	Nonlinearity
OFFERR	Offset error
OFFSET	Offset voltage
PWD_{TH}	Pulse width threshold
Q TRANS	Storage transfer
ΔR_{AVG}	Change in average resistance
$R_{DS(ON)}$	Resistance, on
+SR	Slew rate positive
-SR	Slew rate negative
t_{AA}	Address access time
t_{AC}	Access time from chip select
t_{ACQ}	Acquisition time
t_{BLANK}	Blank time
t_{CLEH}	Time convert, low to high
t_{CONV}	Conversion time
t_{DELAY}	Timing delay
t_{DP}	Timing parameter DP
t_{DS}	Timing specification

INTEGRATED CIRCUIT ELECTRICAL PARAMETER
SYMBOLS AND ABBREVIATIONS (Continued)

t_{DSC}	Timing parameter DSC
t_{HS}	Timing parameter HS
$t_{OFF/ON\ HBE}$	High bit enable propagation delay
$t_{OFF/ON\ LBE}$	Low bit enable propagation delay
t_{PD}	Propagation delay time
t_{PD-DO}	Propagation delay time from clock input to data output
t_{PDE}	Propagation delay from register enable to output
t_{SETUP}	Setup time
V_{CC}	Collector supply voltage
V_{DD}	Drain supply voltage
V_{EE}	Emitter supply voltage
$V_{I(H/L)}$	Input voltage, high/low level
V_{LOGIC}	Logic voltage
$V_{O(H/L)}$	Output voltage, high/low level
V_{OS}	Offset voltage
V_P	Pinch-off voltage
$V_{R(FREQ)}$	Voltage, reference frequency
V_{REF}	Reference voltage
V_{REFL}	Reference voltage under load
V_{SAT}	Saturation voltage
V_{SS}	Source supply voltage
$V_{TH(H/L)}$	Threshold voltage, high/low level
V_{TN}	Threshold voltage, negative
V_{TP}	Threshold voltage, positive

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16. Abstract <p>This document provides steady-state, total-dose radiation test data, in graphic format, for use by electronic designers and other personnel using semiconductor devices in a radiation environment. The data were generated by JPL for various NASA space programs. The document is in two volumes: Volume I provides data on diodes, bipolar transistors, field effect transistors, and miscellaneous semiconductor types, and Volume II (Parts A and B) provides data on integrated circuits.</p> <p>The data are presented in graphic, tabular, and/or narrative format, depending on the complexity of the integrated circuit. Most tests were done using the JPL or Boeing electron accelerator (Dynamitron) which provides a steady-state 2.5-MeV electron beam. However, some radiation exposures were made with a Cobalt-60 gamma ray source, the results of which should be regarded as only an approximate measure of the radiation damage that would be incurred by an equivalent electron dose. All data were generated in support of NASA space programs by the JPL Radiation Effects and Testing Group (514).</p>					
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